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1947 - 1948 - CHAPTER 4 - HEADQUARTERS

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HISTORY OF AFSWP
CHAPTER 4 - HEADQUARTERS

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CHAPTER 4 - HEADQUARTERS

SECTION 1. GENERAL

4-1-1. Total Number of Personnel.

The personnel on duty at the headquarters of the AFSWP, in Washington, D. C., on 31 March 1947 (when the Project had hardly started) consisted of a total of 19 officers (of whom 18 were Army and 1 was Navy), and 13 civilians; by 31 December 1947, the headquarters organization had grown to 63 officers (33 Army, 21 Navy, and 9 Air Force), 50 enlisted men (29 Army, and 21 Navy), and 42 civilians; and at the end of the period covered by this volume, 31 December 1948, the organization consisted of 75 officers (37 Army, 22 Navy, and 16 Air Force), 41 enlisted men (26 Army, 10 Navy, and 5 Air Force), and 49 civilians (of whom one was a part time consultant).

The totals of these figures may be tabulated as follows:

		31 Mar 47		31 Dec. 47		31 Dec. 48	
Officers:	Army	18		33		37	
	Navy	1		21		22	
	Air Force	-		9		16	
	Total		19		63		75
Enlisted:	Army	0		29		26	
	Navy	0		21		10	
	Air Force	-		0		5	
	Total		0		50		41
Civilians			13		42		49
Total			32		155		165

(These figures were obtained from military and civilian personnel records of AFSWP.) (Ref. 32)

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4-1-2. Location.

The headquarters offices of the AFSWP were first located in the then so-called New War Department Building, at 21st Street and Virginia Avenue, N.W., Washington, D. C., where the Washington offices of the Manhattan District were also located. On 15 April 1947, the AFSWP offices were moved to the Pentagon, where they remained throughout the rest of the current period of this History, first on the fifth floor and later (after 6-7 October 1947) on the second floor, corridor 2. The second floor location was well suited to the Project's security requirements, with a single guarded doorway for entrance and exit (plus a sealed emergency fire exit).

4-1-3. Organizational Units.

In the sections which follow, the leading personnel and activities of the headquarters of the AFSWP are described under separate headings by organizational units. In the first part of the next section (Section 2), which deals with the Chiefs and Deputy Chiefs, the descriptions are divided into two classifications: the Administration of General Groves and the Administration of General Nichols. In the later sections, dealing with the activities of the Divisions, this distinction has not been made, but the administration under which any event occurred can be readily determined by its date.

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SECTION 2. EXECUTIVE OFFICE

4-2-1. The Chief and the Deputy Chiefs.

a. Administration of General Groves.

Between 1 January 1947 and 28 February 1947 there was no officially appointed Chief of the AFSWP, and Colonel S. V. Hasbrouck was the senior officer of the organization during that period (see par. 2-2).

Major General L. R. Groves was appointed the first Chief on 28 February 1947, and served for one year, until his retirement on 29 February 1948. He retired with the temporary rank of Lieutenant General, having been promoted on 24 January 1948.

It is not necessary to recount here General Groves' distinguished record with the Manhattan District, which is described factually in some detail in the Manhattan District History. It should be recorded here, however, that his retirement was made the occasion for the enactment of an unusual bill by the Congress of the United States. This bill "authorized and requested" the President to appoint him, "without confirmation by the Senate", to the permanent grade of Major General in the Regular Army, effective as of the day prior to the effective date of his retirement; and, in addition, to place him on the retired list "with the rank and grade of lieutenant general with honorary date of rank thereof as of July 16, 1945, which date commemorates the first explosion by man of an atomic bomb..."

This bill, S. 2223, was passed by the Senate on 10 May 1948 and by the House on 16 June 1948. It was signed by the President on 24 June 1948 and became Public Law 394A. (See Congressional Record, 16 June 1948, pp. 8634, 8635)(Ref. 33)

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Rear Admiral W. S. Parsons, U. S. N., was appointed Deputy Chief of the AFSWP, pursuant to the memorandum order of 29 January 1947 (see Chap. 2), by specific order dated 31 March 1947, effective on that date/ (Ref 34).

Previously, on 6 November 1946, Admiral Parsons had become a Navy member of the Military Liaison Committee to the AEC: at the time

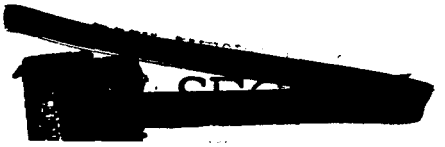


of his appointment as Deputy Chief he was serving also as Director of Atomic Defense for the Navy Department and as Chairman of the Joint Crossroads Committee.

Admiral Parsons had taken a leading part in the activities of the Manhattan District at Los Alamos, serving as Ordnance Division Leader and (after September 1944) as Associate Director of the Los Alamos Laboratory, during the critical period of the development, production and test of the atomic bomb. He had served as Officer-in-Charge of Project Alberta, which included the specific preparations for overseas operations against the enemy; and, on 6 August 1945, he served as weaponeer in the plane from which the first combat atomic bomb was delivered at Hiroshima. (For further factual information about Admiral Parsons' record with the Manhattan District, see the Manhattan District History.)

Admiral Parsons had been relieved of his duties with the Manhattan District on 19 November 1945, and therefore there was of course no question, in his case, (as there had been in the cases of General Groves and Colonel Hasbrouck), as to whether or not he was to be one of those loaned to the AEC on 31 December 1946.

Both General Groves and Admiral Parsons, representing as they did high ranking Army and Navy officers in the field of atomic energy, were logical choices for the positions of Chief and Deputy Chief of the AFSWP, from opposite services. They also fulfilled the interlocking requirements of the charter of the AFSWP, namely that they should be members of the Military Liaison Committee of the Atomic Energy Commission (see par. 3-5a). As we have seen, General Groves had become a member of the MLC on 31 January 1947 and Admiral Parsons had



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become a member on 6 November 1946.

After the enactment of the National Security Act of 1947, 26 July 1947, and after the order was issued by the Secretary of Defense on 21 October 1947, it became necessary for the Chiefs of Staff of the Army and the Air Force and the Chief of Naval Operations to appoint a second Deputy Chief, in order that the Air Force should be properly represented, with the Army and the Navy. By order dated 5 December 1947 (issued by the Chief of Staff, USAF, with the concurrence of the Chief of Staff, USA, and the Chief of Naval Operations), Brigadier General (then Colonel) R. C. Wilson, USAF, was appointed Deputy Chief of the AFSWP. (Ref. 35) ~~(P. & R. records.)~~ At that time Lt. Gen. L. H. Brereton was serving as Chairman of the Military Liaison Committee and also as the Air Force member of that Committee.

It is logical to complete here the record of General Wilson's appointments in the field of atomic weapons although it will extend this account somewhat beyond General Groves' term of office as Chief of AFSWP. Effective 12 April 1948, by memorandum from Secretary of the Air Force W. Stuart Symington, dated 23 April 1948, he was appointed Air Force member of the Military Liaison Committee (Ref. 3[illegible]); he was also appointed Deputy to the Assistant Deputy Chief of Staff, Operations, for Atomic Energy, USAF, effective 6 August 1948. (This last was his principal assignment, with his services as Deputy Chief of AFSWP and as member of the MLC designated additional duties from that time on.) On 27 April 1948 General Wilson was promoted from Colonel to Brigadier General.

General Wilson had made an impressive record as one of the top officers of the Army Air Forces connected with the work of the

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Manhattan District and therefore he was likewise a logical choice for his leading position in the AFSWP. He had been selected by General H. H. Arnold as his representative in directing and correlating important AAF activities which were concerned with the early preparations for combat delivery of the atomic bombs, including modifications of the B-29 planes, preparations for training of crews and liaison with the Los Alamos Laboratory. (For further information, see the Manhattan District History.)

General Groves appointed Colonel S. V. Hasbrouck, U.S.A., as his Chief of Staff, and Colonel H. McK. Roper, U.S.A., as his Deputy Chief of Staff, as of 28 February 1947, by orders dated 18 December 1947. These two officers had served with distinction in combat during the War and had both attained the temporary rank of Brigadier General, but, under the post-combat readjustment of grades of high-ranking officers, they had reverted to the rank of Colonel. Their first connection with atomic energy matters had occurred with their assignment to the Manhattan District - Colonel Hasbrouck on 8 April 1946 and Colonel Roper on 7 April 1946. As special assistants to General Groves they had rendered important service, notably in planning and organizing the beginnings of the AFSWP, both in field installations and in the headquarters.

Other appointments made by General Groves, of Chiefs of Divisions, Commanders of field installations, and other key positions, will be recorded elsewhere hereinafter, in the sections of the History devoted to the activities of the respective units.

b. Administration of General Nichols.

After General Groves retired from the Army on 29 February 1948, the AFSWP was commanded temporarily by the Deputy Chief and senior

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ranking officer, Admiral W. S. Parsons, serving as Acting Chief, until Major General K. D. Nichols was formally appointed Chief on 27 April 1948.

General Nichols had served with distinction in the Manhattan District throughout its active history. Reporting to General Groves, he had borne the brunt of the responsibility for directing the work of the District, first as Deputy District Engineer and then, from August 1943 until February 1947, as District Engineer of the Manhattan District. Information on this service may be found in the Manhattan District History.

Upon being relieved from duty with the Manhattan District on 27 February 1947, General Nichols was assigned to the United States Military Academy as Professor of Mechanics, effective 8 March 1947.

On 27 April 1948, General Nichols was appointed not only Chief of the AFSWP but also, simultaneously, the senior Army member of the Military Liaison Committee and Deputy to the Director of Plans and Operations Division (Atomic Energy), G. S., U. S. Army/ (Ref. 37).

General Nichols had held the rank of Colonel throughout most of his service with the Manhattan District. On 22 January 1946 he had been advanced to Brigadier General, but, under the post-combat readjustment of grades of high-ranking officers, he had reverted to a colonelcy on 30 June 1946. On the same day that he was formally appointed Chief of the AFSWP, 27 April 1948, he was promoted to Major General.

As members of the Military Liaison Committee, General Nichols, Admiral Parsons, and General Wilson served also as on the Committee on Atomic Energy of the Research and Development Board of the National Military Establishment.

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4-2-2. Advisers.

a. Scientific Advisers.

For some time during the current period of this History, it became increasingly evident to those who were in closest contact with the technical problems of the AFSWP that it would be useful to obtain the services of independent advisers, for technical guidance of the project. About 1 October 1948, Dr. W. A. Noyes, Jr., Chairman of the Chemistry Department of the University of Rochester, was appointed scientific adviser to the Chief of the AFSWP, and a Scientific Advisory Committee was set up, consisting of Dr. Noyes as Chairman and Dr. Herbert Scoville, Jr., of the Technical Branch of the Radiological Defense Division (see par. 4-5-6 hereinafter) as Secretary.

About 1 November 1948, Dr. Noyes formed an Instrumentation Advisory Group, of which the following were duly appointed members:

Dr. G. Failla (director of the Radiological Research Laboratory, College of Physicians and Surgeons, Columbia University), Chairman;

Dr. W. F. Bale (biophysicist from the University of Rochester);

Mr. Adrian Dahl (Instruments Branch, AEC, Oak Ridge, Tennessee);

Dr. F. R. Shonka (Chief of Instrument Division, Argonne National Laboratory).

The Advisory Committee and its subsidiary group were particularly useful in determining for the Chief of the AFSWP the best courses of action from the independent scientific viewpoint, unhampered

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by considerations of inter-service complications. They were principally concerned with the activities of the Radiological Defense Division, described in Section 5 of this chapter.

b. Medical Adviser.

From about 1 July 1947 throughout the balance of the current period of the History, Colonel James P. Cooney, MC, U. S. Army, served as Medical Adviser to the Chief of the AFSWP. (During a part of this period Colonel Cooney served also as Chief of the Medical Branch of the Radiological Defense Division, as described in par. 4-5-8 b, hereinafter.) Colonel Cooney advised the Chief on all medical matters involved in the activities of the AFSWP.

4-2-3. Liaison with Other Agencies.

Although the AFSWP and its personnel have been required to deal with many other agencies during the carrying out of its mission, those with which the contacts have been most frequent and most important are: (1) the three Arms of the National Military Establishment, the Army, the Navy and the Air Force; (2) The Atomic Energy Commission, principally through the Military Liaison Committee; and (3) the Committee on Atomic Energy of the Research and Development Board.

a. Army, Navy and Air Force.

In the discussion of the charter of the AFSWP, in par. 3-6, the emphasis placed on the joint nature of the organization and on the provision for joint representation of the services was described. As a result of the cooperative manner in which these provisions have been carried out by the personnel of the AFSWP, the Project has become such a successful model of interservice cooperation that Secretary of

Defense James Forrestal included the following words in his report of 1948:

"The Armed Forces Special Weapons Project is noteworthy as a unified interservice agency, in which representatives of the Army, Navy, and Air Force are assigned to jobs on the basis of their knowledge and abilities, with little or no reference to the uniform they wear. Its successful operation makes it a pilot model for the success of further unification measures in the National Military Establishment." (First Report of the Secretary of Defense, 1948, page 54.) (Ref. 38)

At a later point in the same report, the Secretary said: "For example, one division is headed by a Navy captain, an Air Force Colonel is his deputy, and three assistants are Army officers." (Ibid., page 56.)

There can be no doubt but that there was a greater unity of purpose and a more smoothly-functioning cooperation, between the services, in the matters with which the AFSWP was concerned, than could have been expected during the current period of the History - a period which included the inter-service complications which accompanied the initiation of the National Military Establishment and the development and enactment of the legislation which created it. These cooperative conditions were due in part to the assignment, at the top of the AFSWP, of an executive officer from each of the three services, and in part to the distribution, throughout the organization, of directing officers without regard to the particular service to which they belonged; they were due in part also to the interlocking positions held by the Chief and the Deputy Chiefs of the AFSWP, respectively, in the Office of the

Chief of Staff, U. S. Army, the Office of the Chief of Naval Operations, U. S. Navy, and the Office of the Chief of Staff, U. S. Air Force; and they were due in part to the high caliber of the executive officers and the morale of their organization.

Yet the interlocking positions of the executive officers of the AFSWP also entailed some handicaps and some difficulties in carrying out the mission of the Project. It was inevitable that the representatives of the three services should at times find it difficult to reach agreement on actions or policies which might involve the division of their loyalties - on the one hand their loyalty as officers of the AFSWP and on the other hand their loyalty as representatives of the staff offices of their individual services.

It could be argued that the benefits of the interlocking positions might be outweighed by the handicaps, and that the efficiency of the AFSWP would have been promoted to an even greater degree if its executive officers had been more independent, without interlocking positions in their respective services. It could be argued with perhaps equal force, however, that the interlocking service positions of the executive officers of the AFSWP were of great benefit in the long run, because they tended to confine the interservice disagreements within the "family" - within the councils of the project - rather than allow such disagreements to spread outside; and that they provided the best possible means for bringing persuasively to the official attention of the higher echelons of all the services the overall, tri-service, national point of view - the AFSWP point of view - on military atomic energy matters.

Further considerations affecting this question include:

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the possibility that the work load of the executive officers might at some time be too great to permit them to devote the required attention to each of their multiple duties; and, on the other hand, the difficulty, especially during this first period of the history of the AFSWP, of finding enough officers, in each of the ~~their~~ three services, sufficiently informed and experienced in atomic energy matters to fill the required positions without overlapping.

For the long term view, the answer to this whole question, as of 31 December 1948, may be that a further period of time must elapse before final determination can be made as to whether it would be advantageous to continue the interlocking situation or not.

The above discussion is intended to apply only to the interlocking positions in the staff offices of the services, and not to the interlocking positions which the executive officers of the AFSWP held also in the Military Liaison Committee to the Atomic Energy Commission and in the Committee on Atomic Energy of the Research and Development Board, hereinafter described. It is not likely that anyone could question the advantages of overlapping personnel in the membership of these committees.

b. Atomic Energy Commission.

(1) Military Liaison Committee.

Reference was made in chapter 1, par. 1-2c, to the cooperation of the personnel of the AFSWP and the AEC. The major dealings, at the highest level, between these two agencies were carried on, in accordance with the law, through the Military Liaison Committee to the AEC. The term "to the AEC" is here used advisedly; although the MLC came into existence through the Atomic Energy Act of 1946 and could be technically

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regarded as "of the AEC" it was actually, principally because of its advisory functions and because of the appointment of its members from and by the armed services, somewhat apart from the Commission's operations and councils.

The history of the Military Liaison Committee and its relations with the AEC lies outside the scope of this History. The results of those relations and the results of the activities of the Committee, however, touch the AFSWP intimately throughout its history. It is therefore proper to present here a brief outline of the organization and personnel of the Committee.

The first chairman of the Military Liaison Committee was Lt. Gen. L. H. Brereton (an Army Air Forces Officer), appointed 27 July 1946. On the same date, Major General Lunsford E. Oliver and Colonel J. H. Hinds were appointed Army members, and Rear Admiral T. A. Solberg and Rear Admiral R. A. Ofstie were appointed Navy members, Rear Admiral W. S. Parsons became an additional Navy member on 6 November 1946. General Oliver served only until 2 February 1947, having been succeeded by General Groves, who was appointed on 31 January 1947. At that time the membership was as follows:

Lieutenant General L. H. Brereton, Chairman

Major General L. R. Groves

Colonel J. H. Hinds

Rear Admiral T. A. Solberg

Rear Admiral R. A. Ofstie

Rear Admiral W. S. Parsons

and Commander F. L. Ashworth served as Executive Secretary of the Committee.

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When General Nichols became the senior Army member, on 27 April 1948, a number of changes in the Committee had taken place. General Brereton, although he continued to be a member of the Committee until 1 July 1948, had been succeeded as chairman by a civilian, Mr. Donald F. Carpenter (formerly of the Remington Arms Company), on 6 April 1948. General Wilson had succeeded Admiral Solberg, to become the second Air Force member, on 12 April 1948. (Admiral Solberg's membership overlapped until 23 April 1948.)

On 1 July 1948, when General Brereton left the Committee, Major General D. M. Schlatter was appointed the senior Air Force member; and on 21 September 1948, Mr. William Webster, business executive, former Vice President of the New England Utility Company, who had served with the National Defense Research Committee during World War II, succeeded Mr. Carpenter, who then became Chairman of the Munitions Board. From that date until the end of the year 1948, the membership of the Committee was as follows:

Mr. William Webster, Chairman

Major General K. D. Nichols, Army member
Colonel J. H. Hinds, Army member
Rear Admiral R. A. Ofstie, Navy member

Rear Admiral W. S. Parsons, Navy Member

Major General D. M. Schlatter, Air Force member

Brigadier General R. C. Wilson, Air Force member

and Colonel James B. Knapp served as executive secretary of the Committee.

The Secretary of War and the Secretary of the Navy issued a charter to the Military Liaison Committee on 17 January 1947, and the Committee operated under this charter until the issuance of a new charter by the Secretary of Defense on 12 April 1948 (Ref. 39,40). The new charter provided

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not only for a civilian chairman but also for broadened responsibilities and increased powers in connection with the integration of atomic energy activities within the National Military Establishment.

The Military Liaison Committee performed the functions assigned to it by the Atomic Energy Act of 1946 (see par. 1-2) and also, under the charter of 12 April 1948, in the words of Secretary Forrestal, "advises the Secretary of Defense on all atomic energy matters, acts as his agent in coordinating the National Military Establishment atomic energy program, and continuously surveys the activities of other Government agencies to determine whether such activities are in consonance with the interests of national security." (First Report of the Secretary of Defense, 1948, page 52; see also ibid., page 16.)(Ref 38)

The Committee also served as the Committee on Atomic Energy of the Research and Development Board, which was established in the National Military Establishment under the National Security Act of 1947. In this capacity the personnel of the Committee was augmented by prominent scientific and industrial members. (Ibid., page 53.)

"I want to record my personal satisfaction with the existing statute governing matters in the field of atomic energy, and to express my pleasure, also, at the way in which relationships between the National Military Establishment and the Atomic Energy Commission are being conducted."

This statement appears in Secretary Forrestal's report of 1948 (page 16) and shows how well the Military Liaison Committee, (and the AFSWP through that Committee) performed those of their functions which are inter-related with the AEC, in conformity with the law. This opinion

of the Secretary is particularly noteworthy when considered in conjunction with the situation which the law produced, as described in Chapter 1 (see par. 1-2c), and it may be regarded as impressive evidence in connection with the evaluation of the strength or weakness of the Atomic Energy Act of 1946. It is not conclusive, however, and it is believed that a considerably longer period must elapse before such an evaluation can be complete. It may be that the final test of war will be necessary before full determination can be made.

Perhaps the greatest handicaps produced by contacts at the high-level - through the MLC - were: the length of time involved in obtaining cooperative action and the delays thus occasioned; the difficulties in obtaining complete detailed information on current activities of the AEC; and failures in securing AEC approval of desired actions.

The high-level relationships were supplemented by direct contacts at lower levels - at the so-called "working-levels", which did not involve questions of high policy. These presented fewer difficulties and were usually not subject to serious delays insofar as headquarters contacts in Washington were concerned. In the field, however, at Sandia Base, greater difficulties were encountered at the working levels, especially in connection with the activities with which the Development Division of Headquarters, AFSWP, was concerned. (See Section 6 of this chapter.)

(2) Division of Military Application.

The Atomic Energy Act of 1946 established four divisions "within the Commission", of which one was designated the Division of Military Application; the Act specified that the Director of this

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Division "shall be a member of the armed forces", and directed that each Division should exercise such of the Commission's powers under the Act as the Commission might determine. (See par. 1-2b.)

Brig. General James McCormack, Jr., USA, was appointed Director on 1 February 1947, and continued to serve in this post throughout the rest of the current period of this History. Captain James S. Russell, USN, was appointed to the Division on 1 June 1947, and served as Chief of its Weapons Branch. During a part of the current period, Captain Russell served also as Executive Officer of the Division.

In 1947, the Division of Military Application was organized with four branches: the Research and Development Branch, headed by Lt. Colonel K. D. Fields (formerly of the Manhattan District); the Weapons Branch, headed by Captain Russell, with Colonel R. G. Butler, Jr.,(formerly of the Manhattan District) serving as Deputy Chief; the Power Branch, headed by Colonel D. J. Keirn; and the Medicine and Radiology Branch,in which Lt. Colonel Sam Efnor, Jr., served as Chemical Officer and Major Maxwell Dauer served as Radiological Physics Adviser.

As of 31 December 1948, the organization of the Division remained substantially the same, except that the Research and Development Branch, consisting of Lt. Colonel Fields, had been incorporated in the Weapons Branch, and a Program Branch had been added. There had also been some changes in key personnel. The Division on that date consisted principally of the following: the Director, General McCormack; his Special Assistant, Dr. Paul C. Fine (formerly with the NDRC and the Manhattan District); his Executive Assistant, Mr. Louis B. Gettman; the Weapons Branch, headed by Captain Russell, USN; the Power Branch, headed

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by Colonel D. J. Keirn, USAF; the Radiological Branch, headed by Colonel James P. Cooney, USA; and the Program Branch, headed by Mr. Hugh C. Smith. (With the creation of the Division of Reactor Development within the AEC on 15 September 1948, steps were taken to transfer to that Division the Power Branch of the Division of Military Application, but this transfer did not take place until after the end of the current period of this History, on 1 February 1949.)

The personnel of the Division with whom the AFSWP carried on its dealings included, principally, those mentioned above, and also (in alphabetical order): Mr. Lawrence H. Bayer, Colonel William L. Bell, Jr., Colonel Richard T. Coiner, Jr., Cmdr. E. B. Hooper, USN, Colonel Paul T. Preuss, and Colonel William K. Skaer, all of the Weapons Branch.

Liaison of the AFSWP with the Division of Military Application was handicapped during a considerable part of the current period of the History by the preoccupation of personnel of the Division with the tests of Operation Sandstone, for which Captain Russell served as Test Director. This situation improved, however, toward the end of 1948, and more effective cooperation between the two organizations was achieved.

(3) Sandia Joint Research and Development Board.

For coordination between the AFSWP and the AEC in research and development in the field, the representatives of the two organizations established about 1 March 1948, with the approval and concurrence of the Director, Los Alamos Laboratory, and the Chief, AFSWP, a joint Research and Development Board at Sandia Base, composed of three members from the Sandia Laboratory and three members from the military staff of the base.

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The Laboratory members were personnel of the AEC's contractor, the University of California, and as a working-level body the joint board accomplished much toward mutual participation in solving problems and pooling information and facilities. From the point of view of the AFSWP, however, the joint board did not prove to be quite so useful as had been hoped. The contractor members insisted upon an awkward formality of procedure, processing all communications through the formal channels of the AEC, and this failed to promote the close understandings and relationships which were desired. Meetings were held monthly or oftener as deemed necessary by the members, and the proceedings of the meetings were distributed to the Los Alamos Laboratory, the Office of AEC Santa Fe Directed Operations, the AEC, the Military Liaison Committee, and the AFSWP. (~~See App. 4~~ Ref. 41, p. 13; ~~App. 11~~ Ref. 42, pp. 1,2; see also, par. 4-6-2.)

(4) Committees and Panels.

Representatives of the AFSWP served from time to time with representatives of the AEC (and of other organizations) on a number of different committees, boards or panels. In addition to the Sandia Research and Development Board, described above, the most important were, all connected with radiological activities:

(a) Joint Radiological Safety Training Committee and its Subcommittees (see par. 4-5-2a);

(b) Radiological Instrumentation Committee (see par. 4-5-2b);

(c) Radiological Protection Committee (see par. 4-5-2c);

(d) AEC - NME Medical Panel (see par. 4-5-4c);

(e) Joint NME - AEC Panel on Radiological Warfare (see par. 4-5-6b and par. 4-8-4).

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Representatives of the Project served also on other committees, etc., which did not include in their memberships any representatives of the AEC as such. An example was the Subcommittee on Organization, of the Military Liaison Committee (see par. 4-8-2).

c. Committee on Atomic Energy (CAE)

The Committee on Atomic Energy was organized by the Research and Development Board of the National Military Establishment as of 30 September 1947 (Ref. 38). This Committee was very closely allied to the Military Liaison Committee and its membership included all the members of that Committee, with the following additional members:

Dr. James B. Conant, President of Harvard University, and war-time Chairman of the National Defense Research Committee;

Dr. J. R. Oppenheimer, Director, Institute for Advanced Study, Princeton, N. J., and war-time Director of the Los Alamos Laboratory; Chairman of the General Advisory Committee of the AEC;

Dr. C. A. Thomas, Executive Vice-President and Technical Director of Monsanto Chemical Company, who had been closely associated with important work of the Manhattan District;

Mr. William F. Hosford, Vice-President and retired Director of the Western Electric Company.

The Committee on Atomic Energy occupied very much the same position with respect to the AFSWP in connection with the Project's dealings with the Research and Development Board as the Military Liaison Committee occupied with respect to the AFSWP in connection with the dealings with the Atomic Energy Commission. There was one important difference, however: whereas the MLC, primarily because of the provisions of the law which created it, was somewhat apart from the AEC, the CAE, on the

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other hand, was very closely linked with the Research and Development Board and had definite responsibilities in its own field, delegated to it by the Board. In general, matters of a technical or scientific nature in which the National Military Establishment has been concerned, involving research or development in the field of atomic energy or radiological warfare, have been taken up with the Committee on Atomic Energy.

In dealing with the Committee, the AFSWP was to a considerable extent dealing with its own officers, and the relationship was of course close and cooperative.

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4-2-4. Custody of Atomic Bombs.

a. Introduction. In Chapter 1 of this volume of the History, reference was made, in the discussion of various items which were in doubt when the Atomic Energy Commission took over control from the Manhattan District on 1 January 1947, to the question of the custody of the completed atomic bombs and the completed bomb components (par. 1-4 k). It was there stated, under the heading "Fissionable Materials and Weapons", that all fissionable material and all weapons and weapon parts were transferred to the Atomic Energy Commission, and it was explained (as stated, "to anticipate a later chapter") that the President, ~~had so found,~~ had decided not on 23 July 1948, to turn back any of these items to the custody of the armed forces, despite the unanimous recommendations of the four Secretaries, the three Chiefs of Staff, and the Military Liaison Committee.

The subject of the custody of the bombs is vitally important, affecting as it does, from the military viewpoint, major considerations in the preparation, training and planning for the defense of the nation in any future war, and affecting the potential efficiency and speed of action of the armed forces in the event that war is declared. Therefore, and because the submission of the question to the President for decision was the first instance when such action was taken under the provisions of the Atomic Energy Act of 1946, this subject merits historical description in some detail. Although the Military Liaison Committee, under Chairman D. F. Carpenter, carried the principal burden in instituting the appeal to the President in conformity with the terms of the law, the Armed Forces Special Weapons Project was nevertheless

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closely concerned and closely involved throughout the proceedings.

Even before the AEC took over and before the AFSWP came into existence, in December 1946, the future custody of the completed weapons was the subject of discussions and correspondence between the War Department and the AEC and between the Military Liaison Committee and the AEC. In Secretary Patterson's letter to Chairman Lilienthal of 30 December 1946, in discussing the question of retention of the storage bases by the Army, he stated: "I anticipate that when the matter has been reviewed by the President, he will direct that a certain number of bombs and bomb parts will be wholly within the custody of the armed services which are charged with the national defense." (See par. 1-4 d)

At a joint AEC-MLC meeting in December 1946, the MLC informally indicated the desirability of transferring custody of stockpile weapons to the National Military Establishment, but no decision was reached. (See "Memorandum of Discussions on Custody", Ref. 43) ~~in "CUSTODY" file.)~~

During the period of about a year and a half which followed, both the Atomic Energy Commission and the Military Liaison Committee examined the question from all sides and discussed it at length. As the atmosphere of hope for international agreement on control of atomic energy gradually dissipated, and as the international situation appeared to grow more and more tense, the question of military custody assumed greater and greater importance to the armed forces. It was hoped for a long time by the MLC that agreement could be reached with the AEC, so that the two organizations could present the matter to the President, in unanimous agreement, for action under the terms of Section

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6 (a) of the Atomic Energy Act. The records show that the question of custody was discussed at joint meetings of the AEC and the MLC, not only in December 1946 but also in August and November 1947, and in February, March, May and June 1948; also considerable correspondence on the subject was exchanged between the two organizations in the intervals between meetings. (See "Memo of Discussions on Custody", Ref 43 "~~CUSTODY~~ File.)

The proposals of the MLC, as they finally developed in the spring of 1948, may be described, briefly, as follows:

(1) The responsibility for national stockpiles of atomic weapons would be assigned to the armed forces in the reasonably near future, after full preparations for their custody could be completed.

(2) The Atomic Energy Commission would assist the armed forces in the surveillance of atomic weapon components.

(3) The AFSWP, in behalf of the National Military Establishment, would be responsible for the custody and surveillance of atomic weapons after their transfer to the armed forces.

(4) Mutually agreeable details and a schedule for the transfer of weapons and components would be prepared jointly by the AFSWP and the AEC.

(5) Decisions pertaining to the use of atomic weapons would be made by the President, in conformity with the law, without any change; and, similarly, no fissionable material would be expended without approval of the President.

(6) The location and movements of atomic weapons would be made known to the AEC, except when such movements would be made by

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direction of the President in execution of war plans. (See "Draft", May 1948; and Memo for Gen. Wedemeyer, by Gen. Nichols, 14 June 1948; (Ref. 44) ~~"CUSTODY" File.~~)

b. Meeting at Sandia Base, 24-27 May 1948. The AFSWP was of course the logical agency of the National Military Establishment to take on the responsibility for custody of the weapons if and when that custody should be transferred from the AEC. The AEC, however, raised a question as to whether the personnel of the armed forces were technically competent for the complicated tasks which would be involved. It was therefore desirable, in seeking the agreement of the AEC, to prove to the members of the Commission that the AFSWP installation and its personnel at Sandia Base were fully qualified and could be made ready for this responsibility in a comparatively short time.

At a meeting on 19 April 1948, the Military Liaison Committee adopted unanimously the following resolution (Ref. 45):

"WHEREAS, the Military Liaison Committee had considered the question of custody and had recommended to the Secretary of Defense that necessary action be taken to transfer the custody of completed atomic weapons and components from the Atomic Energy Commission to the National Military Establishment (Appendix to J.C.S. 1848); and

"WHEREAS, the Joint Chiefs of Staff have concurred in principle with such transfer of custody (Enclosure to JCS 1848/1); and

"WHEREAS, the Secretaries of the Department of the Army, the Department of the Navy and the Department of the Air Force have likewise concurred in principle with such transfer of custody; and

"WHEREAS, the Chief, Armed Forces Special Weapons Project, has advised that there is no emergency requiring the immediate transfer of custody since interim arrangements are being worked out to permit the orderly transfer of individual weapons in the case of emergency; and

"WHEREAS, the Atomic Energy Commission has raised what it believes to be important considerations pertaining to the transfer of custody because of the questions of technical abilities of agents of the Armed Forces; and

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"WHEREAS, the Secretary of Defense has asked for advice on this matter:

"THE COMMITTEE THEREFORE RESOLVES that it shall invite representatives of the Atomic Energy Commission to meet with the Military Liaison Committee at Sandia Base, New Mexico, at the earliest practicable date but not later than 1 June 1948 for the purpose of becoming familiar with all aspects of the problems associated with the transfer of custody and of arriving at agreement in the matter of custody which can thereafter be presented jointly by the Secretary of Defense and the Chairman, Atomic Energy Commission, to the President." (See File C-316)

It may be noted, parenthetically, that the wording of the fourth "Whereas" clause in this resolution, referring to the Chief of the AFSWP, later created some misunderstanding as it was interpreted by some to indicate that he did not consider the transfer of custody of atomic weapons an urgent matter. In pointing out this possibility of misinterpretation and in seeking to correct it, in a letter to Chairman Carpenter of the MLC, dated 29 June 1948 (Ref. 46), General Nichols stated:

"I feel now, as I have always felt, that the assignment of custody of atomic weapons to the military is a matter of urgency and the question should be referred to the President for decision at the earliest practicable date." ~~(See "CUSTODY" File.)~~

The meeting at Sandia Base which was called for in the resolution of the Military Liaison Committee took place 24 to 27 May 1948.

Part of the time was spent on an inspection tour of facilities, followed by conferences on 26 and 27 May. Those who attended the conferences included:

For the Atomic Energy Commission: Commissioners Robert F. Bacher, Sumner T. Pike, Lewis L. Strauss, and W. W. Waymack;

For the Military Liaison Committee: Mr. D. F. Carpenter, Chairman; Major General K. D. Nichols; Colonel J. H. Hinds; Rear Admiral R. A. Ofstie; Rear Admiral W. S. Parsons; Lt. Gen. L. H. Brereton; and

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Brigadier General R. C. Wilson.

There were also present: Brigadier General R. M. Montague, Major General D. M. Schlatter, Captain T. B. Hill, USN, Commander F. L. Ashworth, Mr. Paul J. Larsen, Mr. George Craker, and Brigadier General James McCormack, Jr.

Others, including Colonel H. McK. Roper and Major Taylor Drysdale, of the AFSWP, went out to Sandia Base from Washington in a party which included most of those listed above, but did not attend the conferences.

An extensive and informative inspection trip was scheduled for the party. The schedule and agenda included: an introductory briefing and a description of the storage sites; visits to the nearby storage sites, and to the ordnance area; description of bomb components, and assembly; introduction to 38th Engineer Battalion and description of its organization, capabilities, possible missions, selection of personnel, training and operations; discussion of team organization, experience of personnel, equipment, team operating site (permanent and portable); tour of assembly rooms, firing laboratory, fusing laboratory, battery laboratory, etc., with exhibitions of assembly operations and tests; explanation, description and exhibition of training operations; tour of Sandia Laboratory Technical Area, including surveillance facilities; visit to Los Alamos, with discussions there of "Development and Surveillance Problems"; final conferences at Sandia Base on the military position concerning custody (opened by General Nichols) and the capabilities of the Sandia Base organization for custody and surveillance (presented by Colonel Hertford ~~Harbor~~).

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~~(See Mile 6-377)~~

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The action of the MLC at the conferences at Sandia Base was in the nature of a presentation of a statement of points of understanding, prepared in preliminary fashion, for further consideration at a meeting to be held about two weeks later in Washington. (See "Memo of Discussions on Custody", ~~"CUSTODY" File.~~ Ref. 43)

c. MLC-AEC Meeting on 16 June 1948. The contemplated further joint meeting of the Military Liaison Committee and the Atomic Energy Commission took place in Washington on 16 June 1948.

In preparation for that meeting a "Memorandum for the Atomic Energy Commission" was prepared by the AFSWP, signed by Chairman Carpenter of the MLC (Ref. 48). This memorandum was dated 14 June 1948 and was transmitted to the AEC on that date. This memorandum gives such an excellent presentation of the military point of view with respect to the whole subject of custody that it is quoted herein in toto, as follows:

"June 14, 1948

"MEMORANDUM FOR THE ATOMIC ENERGY COMMISSION

"SUBJECT: Custody and Surveillance of Completed and Stock-piled Atomic Weapons

"1. Prior Consideration of the Question.

"The question of custody of completed atomic weapons which are or will be in war stock pile has, as you know, been thoroughly examined by both the Atomic Energy Commission and the Military Establishment. Commencing in December 1946, it has been discussed at a number of meetings between the Commission and the Military Liaison Committee, the most recent being at Sandia on 26 and 27 May where a complete inspection of the base was made and many of the problems were analyzed. In addition, staff studies of the problems surrounding custody have been made by both the Commission and the Military Liaison Committee. We feel, therefore, that all factors relevant to the question of custody have been brought to light. Nevertheless, it might be well to review

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them in brief, for the consequences of continuing the present arrangements could be serious as emphasized by the events which grew out of the handling of the matter at the time of the recent crisis in Berlin. In order that the defects in the existing procedures may be corrected, we feel very strongly that the question of custody should be submitted to the President for decision in accordance with Section 6 (a) of the Atomic Energy Act at the earliest possible date. It is our hope that this matter may be so submitted as a joint recommendation of the Atomic Energy Commission and the National Military Establishment as an agreed-upon program. This memorandum is designed to form the basis for such a joint submission.

"2. Basic Responsibilities of the Atomic Energy Commission and the Military Establishment.

"The Atomic Energy Commission, under the Atomic Energy Act of 1946, has certain clearly defined responsibilities. These are fully recognized by the Military Establishment. Moreover the Military Establishment recognizes that responsibility for the decisions concerning use of atomic weapons in war resides in the President. Just as the Commission has statutory responsibilities, the Military Establishment, under the direction of the Commander-in-Chief, has by the Constitution and laws of the United States, clearly defined responsibilities to provide for the defense of the United States. This involves preparation of suitable war plans and the maintenance of an effective fighting force in readiness.

"In order effectively to carry out the responsibilities of the Military Establishment, experience has shown that unity of command is essential. There must be a clear chain of authority originating with a single individual, the Commander-in-Chief, acting with the advice of such bodies as the National Security Council, the War Council, the Joint Chiefs of Staff and others. This chain should run straight and clean from the Commander-in-Chief to the basic units which will be called upon to fight. Wherever a division occurs or wherever a single function is to be controlled by two masters, there is room for failure to act in an essential matter -- not necessarily from irresponsibility nor from wilful neglect but from confusion or lack of full understanding as to what must be done and by whom.

"Unity of command must necessarily include control over materiel -- the implements without which a fighting force cannot be effective. This is manifested in a number of ways. In order to integrate logistic and operational plans, the planners must know exactly the location, state of readiness and physical condition of weapons and men, and the same type of knowledge is essential in order to provide in the best possible manner for adequate defense of storage depots. Moreover, flexibility must exist in order that storage of weapons may be arranged to fit military requirements. In addition, there are many intangibles which in the aggregate are extremely important. One of the most important of these is complete familiarity with the particular weapons to be used. The user must know what the weapons look like, how to handle them, their state of readiness, and the extent to which

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minor alterations or repairs may be made without imparing their effectiveness. And he must have the confidence which comes only from complete familiarity with both components and test equipment so that he can be completely certain that they will operate effectively.

"3. Present Conditions.

"With respect to atomic bombs, these criteria are not met at the present time. Control over the location and movement of bombs is now initially in charge of a private organization operating under contract, subject to the requests of the Atomic Energy Commission and subject by agreement to the requirements of the Military Establishment. Only at the very top -- in the Commander-in-Chief -- is authority vested in one place. Moreover, only by negotiated agreement between two co-equal agencies, subject of course to appeal to the President, can such matters as inspection, surveillance, withdrawal for use in training, and maintenance of bombs be arranged. The Military Establishment is, therefore, faced with the possibility that in the event of an emergency there might be delivered to it bombs with which it was not fully conversant and the condition of which, the rapidity with which delivery could be made and the location from which delivery would be made might not adequately be known in advance.

"It is obvious that in an emergency involving atomic warfare unassembled bomb components must be delivered to the military for use at some point. If such delivery is delayed until an emergency is upon us, it would conceivably take place either on the basis of individual bombs delivered directly to assembly teams in accordance with a joint plan or on the basis of a transfer of the entire war stock pile. Serious disadvantages are attached to each of these alternatives. Transfer directly to assembly teams for use necessarily involves a wider dissemination of tactical and operational military plans which contravenes a fundamental principle of information security. Moreover, such direct delivery could only be carried out effectively by perfect cooperation pursuant to minutely detailed plans worked out in advance and involving at least three separate groups -- the Military Establishment, the Atomic Energy Commission and the contractor of the Commission. Under the stresses of an emergency, errors could easily occur, and there probably would not be time to negotiate for a modification of pre-existing plans in case unforeseen circumstances should arise. The second alternative would involve the assumption by the Military under emergency conditions, of an entirely new function for which preparation in advance would be most difficult if not impossible. An organization in such a complex field, complete with handling and testing equipment and facilities, cannot be created overnight. Yet an attempt to transfer a pre-existing civilian organization into military environment in a time of stress could only lead to confusion on the part of all concerned. We feel very strongly, therefore, that now during this period of relative peace, preparations should be made and an organization constructed within the Military Establishment for custody and maintenance of atomic bombs under the terms hereinafter set forth, in order that a going organization

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will be available and functioning in case of emergency.

"4. Capability of the Military Establishment to Assume Custody.

"Subsequent to a Presidential decision to the effect that custody should be transferred, a period of transition must ensue in which the Commission and the Military Establishment jointly care for these weapons and during which military and civilian personnel of the Military Establishment can be trained to perform adequately their assigned functions. But although not ready immediately to perform all of the activities related to custody, the Military Establishment has made progress in a manner which clearly demonstrates its basic capacity. It now has the first teams fully capable of assembling the bombs and others are presently in training. Elements of these teams initially would form the nucleus, and as part of their continued training would perform many of the functions surrounding surveillance. We are convinced that the training of permanent depot personnel is not unduly difficult. These depot groups would be composed of military officers and enlisted men, and civilian scientists and technicians subject to Civil Service regulations and controls. They would, therefore, be available subject to direction to a degree and with a certainty not possible with contractors' personnel or even employees of a civilian agency. Moreover, these groups can be so balanced as between officers, enlisted men and civilians as to assure adequate permanence and continuity.

"We do not believe, therefore, that there are any insurmountable obstacles which would preclude assumption of custody of the stock piled atomic weapons. The Military Establishment having planned and constructed the present and future storage facilities, is familiar with their proposed operation, and, with the continued assistance and cooperation of the Atomic Energy Commission, would be capable of making such modifications as may be necessary to provide the optimum conditions for bomb storage. External security and physical protection of the storage sites is already the function of the Military Establishment, and provision for internal security offers no great difficulties.

"We do not intend that the Military Establishment should assume all operations connected with the Maintenance and testing of weapons and components. Some of these functions properly should be retained by the Commission which has continuing responsibility for surveillance pertaining to development and production of improved atomic weapons. We propose an orderly and progressive transfer in accordance with specific terms which would set the pattern for joint action by the Military Establishment and the Commission and which would obtain except during war or Presidentially ordered preparations for war.

"5. Proposed Conditions of Transfer.

"Specifically, we propose to assume full accountability for atomic weapons and their components. A duplicate of all such records

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maintained by the Military Establishment would, of course, be furnished to the Commission. Physical protection of sites would remain the responsibility of the Military Establishment, and it would assume direct control of the interior of the storage areas. The Military Establishment further would undertake periodic operational inspection, and gradually come to perform, in a manner and to an extent mutually agreed to with the Commission, periodic testing and minor maintenance within the capacity of the Military Establishment. Provisions for inspection, testing and maintenance will, of course, be subject to change, and in all respects will be conducted in a manner responsive to the advice and requirements of the Atomic Energy Commission.

"It is proposed to place within the custody of the Military Establishment only those atomic weapons and components which are completed or subsequently completed, ready for use and intended for war stock piling and which satisfy acceptance specifications. Acceptance specifications in turn, including tolerance limits to cover deterioration while in storage, should be framed jointly by the Military Establishment and the Commission, and of course provision would be made for joint inspection both of new weapons and, to the extent necessary, weapons in storage. Transfer to the Military Establishment would not preclude the Commission from exercising its residual responsibilities with respect to atomic weapons. It would be understood that weapons or components would be returnable to the Commission in accordance with a mutually agreed schedule for study or test or for reworking to incorporate improvements in design. The fissionable materials, of course, since title under the Atomic Energy Act remains in the Commission, would be returnable to the Commission for such use as might be specified by the President. Moreover, the Commission would have a continuing access to the storage areas, and it would be kept completely informed as to the location and proposed movements of weapons or components, except when such movements or proposed movements are made by direction of the President in connection with the execution of war plans.

"With respect to the continuing relationships between the Commission as manufacturer of atomic bombs and the Military Establishment as potential user, we feel that a division of responsibilities can be more clearly defined by providing for custody to be placed with the military. The Commission would continue to be responsible for all production of fissionable materials, for the fabrication of weapon components, and for the design and development of new weapons within the general overall military use requirements as to size, military characteristics, type, etc. The Military Establishment would be responsible, acting in close cooperation and with the aid and assistance of the Commission, for physical custody of all stock piled weapons as provided above. Moreover, the Military Establishment would be authorized to withdraw bombs from storage for use in connection with operational maneuvers, training and test. However, any test involving detonation of fissionable material, any movement of fissionable materials except back to the Atomic Energy Commission or between storage sites would be made only with the approval of the President or such authority as he might designate.

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"6. Time Schedule for Transfer.

"Recent international developments have thrown into sharp relief the need for developing and putting into effect the arrangements outlined above to provide for the care, handling and transportation of those atomic weapons which will be utilized in the event of war or other emergency. This is a time-consuming process and a difficult one. We suggest that four months be allowed from the date of decision to the date of transfer of custody in order to permit the working out of detailed plans. Re-arrangement of the present division of functions related to custody could be completed within sixteen months. In view of the length of time to accomplish this re-arrangement, it is essential that a decision be reached now and that steps be taken immediately to implement the transfer lest a further deterioration of world conditions should find us unprepared to handle an emergency.

"Moreover, we are now in the process of completing permanent storage depots each of which will require the training and organization of handling, inspection and maintenance personnel regardless of whether or not a transfer is made. If transfer is to be made eventually to the Military Establishment, it would be advantageous to provide for such transfer immediately in order that the Military Establishment may build soundly the necessary organizations.

"7. Other considerations.

"We find no legal bar to such a transfer. On the contrary, the record of the deliberations of the 79th Congress relative to atomic energy is replete with evidence of anticipation of the situation now facing us. In enacting the Atomic Energy Act of 1946, the Congress was looking ahead to the extensive use of nuclear energy for peaceful civilian purposes, and it was concerned with assuring that complete control of the sources, the manufacture, and the use of fissionable material should be vested in the Government. In view of the potential size and the ramifications of this undertaking, the Congress chose to establish an organization headed by five outstanding civilians. But it also kept in mind that the primary use for nuclear energy was at the time in weapons, and it never intended to exclude -- and did not exclude -- the Armed Forces from participation in matters affecting their constitutional responsibilities for the defense of the United States. We need not labor this point, for it is expressed in the Act itself and in the record of debates in both houses. (See Sections 1, 2 (c), 4 (e) and 6 of the Act)

"It is also clear from the record that the Congress plainly understood the utilization of nuclear energy had opened a new field full of unknown factors requiring the maintenance of flexibility in matters affecting atomic energy. In Section 1 of the Act the Congress declared that this legislation will necessarily be subject to revision from time to time. Moreover, with respect to operations of the Commission

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the likelihood of change was clearly contemplated. In Section 6, provision was made for the transfer of fissionable materials to the Military Establishment and for authorization of the Military Establishment to engage in production of atomic weapons, should either appear to the President to be necessary or desirable.

"It is clear from the foregoing that the Congress very wisely established a control structure operated by civilians with respect to the larger aspects of the impact of atomic energy on the American people and their economy -- but it is also clear that the Congress, while vesting title to all fissionable material and means of production in this Commission, left the way open to work out administratively such other arrangements as might be desirable with respect to military problems.

"The atomic bomb is the most powerful single weapon now in existence, and it is the most spectacular in terms of its effect on morale. In an atomic war it would be the keystone of our military power, and it is therefore basic to our war planning. Moreover, its influence on international relations cannot be over-emphasized. In these circumstances preventable causes of failure of operation cannot be tolerated. The exploding mechanism has been designed with utmost care in order to minimize chances of failure. These chances may be fairly placed at only one in 10,000. Unfortunately, however, chances of failure due to human error are more than one hundred times greater. It is obvious, therefore, that we must take extreme care to hold these human factors to the absolute minimum. Centuries of experience have demonstrated that the possibilities of human error are least when the personnel who are to perform an important operation with complicated equipment are so thoroughly familiar with that equipment that they can perform their operations mechanically without conscious effort. There is no way to achieve such familiarity other than by intensive and continuous training and practice with the equipment itself. This, we believe, is one of the most important elements in the entire program of dealing with atomic bombs, and it can be adequately handled only through placing full custodial responsibility of the stored weapons in the organizations which will be called upon to use them.

"8. Immediate Action Proposed.

"The Joint Chiefs of Staff and the Secretaries of the Army, Navy and the Air Force have recommended that responsibility for custody of atomic weapons be transferred to the National Military Establishment at the earliest practicable date. With this view the Secretary of Defense agrees. We urge, therefore, that you join with the Secretary of Defense in recommending to the President that custody be transferred substantially in accordance with the terms and conditions outlined above.

"KDN/lmh

"D. F. CARPENTER
"Chairman"

~~(See "CUSTODY" File)~~ (Ref. 48)

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At the meeting on 16 June 1948, the Atomic Energy Commission said that they would be willing to join with the Secretary of Defense in bringing the question of custody to the attention of the President and presenting the technical considerations to him; but they stated that they could not suggest to the President that there was only one possible solution, and expressed their opinion that transfer of custody would be detrimental rather than beneficial to national defense. (See "Memo of Discussions on Custody", Ref. 43 ~~"CUSTODY" File~~)

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d. Presentation to the President. On 30 June 1948, a meeting was held in the office of the Secretary of Defense, at which the following were present: Mr. James Forrestal, Mr. Kenneth C. Royall, Mr. D. F. Carpenter, Dr. V. Bush, Major General K. D. Nichols, Mr. David E. Lilienthal, Mr. Sumner T. Pike, Mr. Lewis L. Strauss, Mr. W. W. Waymack, and Dr. R. F. Bacher.

Mr. Carpenter reviewed the history of the discussions between the AEC and the National Military Establishment on the question of military custody of atomic weapons and pointed out that the primary factors were: national security, public policy, technical considerations concerning the readiness of the Armed Services to conduct surveillance activities, and Atomic Energy Commission managerial aspects of surveillance and development.

It was pointed out that national security and public policy were the two major factors involved, and Dr. Bush suggested that agreement might be reached on all factors except public policy, which the President should decide. Mr. Lilienthal, however, did not concur that such agreement was possible. Members of the AEC suggested deferring a presidential decision on the basis of the status of the storage facilities, political considerations, international considerations, the immediate readiness of the armed services to assume surveillance activities, and the present status of development of the weapon. Representatives of the NME, however, pointed out that a prompt decision was required in order to proceed with the organization of the storage facilities, to insure the most efficient preparation for utilizing atomic weapons, and to facilitate war planning.

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To a suggestion by Mr. Lilienthal and other members of the AEC that a public presentation of the issues involved, prior to decision, was desirable, Dr. Bush suggested that this should be up to the President to decide.

Mr. Forrestal suggested that the AEC and the MLC prepare jointly a paper for presentation of the problem to the President, but Mr. Lilienthal preferred the preparation of a separate parallel paper by each establishment.

The meeting adjourned with the understanding that the question would be presented to the President for decision and that parallel papers would be prepared by the NME and by the AEC. The Secretary of Defense asked Mr. Carpenter to prepare the paper for the NME. (See "Military Custody of Atomic Weapons" 30 June 1948, referred to in letter of transmittal as "Summary Meeting with Mr. Forrestal" - 30 June 1948, ~~"CUSTODY" File.~~ Ref. 49)

The National Military Establishment paper read as follows:

(The paper which follows is a copy of a draft ~~in the "CUSTODY" File~~ dated 8 July 1948~~, a copy of the final document should be substituted.~~) Ref. 50)

"Dear Mr. President:

"Under the Atomic Energy Act of 1946, the President is expressly authorized to direct the Atomic Energy Commission to transfer atomic weapons to the Armed Forces for such use as he deems necessary in the interest of national defense. After careful study, I am convinced that the exercise of such authority is not only justified but has become imperative. National Defense requires that our war stock pile of atomic weapons be placed in the custody of the National Military Establishment to be maintained in readiness for instant use whenever so directed by the President. The Joint Chiefs of Staff and the Secretaries of the Army, the Navy and the Air Force share this conviction, and I attach copies of the letters in which their views are expressed.

"The security considerations which dictate this

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conclusion may be summarized as follows:

"First, the present arrangement results in a basic division of authority and responsibility between two co-equal agencies for the provision of a military weapon in operating condition for war use. Possession and control of all atomic weapons lies in the Atomic Energy Commission while responsibility for final assembly of these weapons and their delivery on an enemy target -- that is, responsibility for their proper functioning in use -- rests with the National Military Establishment. When so ordered by the President, these weapons would be transferred to the National Military Establishment only in the quantity required for an actual attack and at the time of launching such an attack. We believe these arrangements do not permit full military preparedness. An enemy attack in force would expose the United States to unreasonable risk of mistake, confusion and failure to act with the necessary speed and precision. We are convinced that this risk can only be removed by transferring custody of these weapons to the Armed Forces now. Any effort directed merely toward improving present arrangements is subject to the limitations inherent in any relationship between two co-equal agencies which involves dual responsibility for a single object or function.

"Second, it is axiomatic that those who are charged with the actual employment of a weapon in combat, particularly a highly complex weapon like an atomic bomb, must have complete familiarity with it. They must know how to use it, realize its probable defects, and fully understand the improvisations which are possible under emergency conditions. Moreover, they must have complete confidence in the weapon and in their own competence to handle and use it. Such familiarity and confidence can only be acquired by constant inspection and handling of the weapon itself by the performance of those functions which comprise surveillance and by continuous practice in weapon assembly. The National Military Establishment must, in other words, be in a position to train and perfect organizational units in peacetime which will be fully qualified to use the weapon swiftly and competently in any emergency. This requirement cannot possibly be met without military custody of atomic weapons.

"Third, National Military Establishment custody of atomic weapons will facilitate locating and storing the fissionable and non-fissionable components in the most favorable strategic positions and thereby will afford greater flexibility in completing preparations for meeting current war plans for use of atomic weapons when and if such use is approved by the President.

"Fourth, we believe that the transfer of these weapons would further rather than impair the future research and development activities of the Atomic Energy Commission. The Atomic Energy Commission would undoubtedly wish to retain representative weapons for research and development purposes and to have full access to the weapons in storage; the proposed transfer would reduce the activities of the Atomic Energy Commission only in the essentially routine and military type of operations

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involved in accountability and surveillance. Moreover, possible improvements in design which would never become apparent under laboratory conditions might well be discovered by extensive handling on the part of the potential users.

"We are now at a stage in which it is necessary for either the Atomic Energy Commission or the National Military Establishment to build up an organization and to train additional personnel to maintain the increasing accumulation of stock-piled weapons in a constant state of readiness. In order to insure the common defense and security, it is essential that the National Military Establishment assume this responsibility. Technically, the National Military Establishment, with extensive help from the Atomic Energy Commission, has made great progress in training assembly teams to prepare weapons for actual use, and we are capable of providing a sufficient number of competent surveillance groups within a very short period.

"Approximately four months will be required for the National Military Establishment to make preparations to assume responsibility for the custody and maintenance of atomic weapons. We feel very strongly, therefore, that these preparations should be commenced at once in order that a going military organization will be available and functioning in case of emergency. In the meantime, current plans for the emergency transfer of weapons from the Atomic Energy Commission to the National Military Establishment can be continued in effect to safeguard against an emergency during this preparation period. The present state of preparedness would not in any wise be impaired pending this transfer.

"I realize that there may be other matters of general policy which you may wish to consider in connection with this proposed transfer. At the same time, I feel that you should be fully apprised of the strong and unanimous conviction of the Joint Chiefs of Staff and of the Secretaries of the Army, the Navy and the Air Force that immediate transfer of the custody of these weapons is of the utmost importance to our national defense. I concur fully in this opinion and therefore strongly urge that you take the following actions:

"(1) Advise the Atomic Energy Commission that such a transfer will be directed, effective in approximately four months, and

"(2) Instruct the Chairman of the Atomic Energy Commission and the Secretary of Defense, jointly, to work out the necessary details for such a transfer and to prepare, and submit for your approval, a draft of a suitable Executive Order for this purpose.

"Respectfully yours,

"The President
"The White House"

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(Ref 51),

The paper prepared by the AEC, dated 21 July 1948, read as follows:

"MEMORANDUM TO THE PRESIDENT

"Proposal of National Military Establishment:

"That the President issue an order for the total transfer of all stockpile atomic weapons from the Atomic Energy Commission to the National Military Establishment. The proposal recognizes that such order cannot be put into effect earlier than 4 months from the date of issue; it is proposed to be completely in effect by the end of the sixteenth month.

"Commission's Position:

"1. Transfer of these weapons from the civilian Commission to the Military Establishment presents first and foremost a question of over-all policy for determination by the President, and all technical questions are subsidiary. The Commission suggests that the President's decision on this question of policy will be the product of an evaluation by the President of many factors. The vital importance of this question springs primarily from the awesome nature of atomic energy when applied to the destruction of human life, which makes it clear that the atomic bomb is not "just another weapon". The question goes far beyond the statutory responsibility of the Commission and is closely related to the Constitutional position of the President.

"2. The decision on this basic question of policy may well preclude the proposed transfer. In any event, the proposed transfer should be made only if, all factors considered, it would further our national security. The Commission believes that the proposed transfer would involve grave risks to this country's position in the field of atomic weapons and therefore impair to that extent the national security. The Commission feels under a solemn obligation to point out these risks to the President, so that he can weigh them against the advantages asserted by the National Military Establishment.

"3. Any arrangement which does not involve a complete abandonment of civilian control in the field of atomic energy is bound to result in some division of responsibility between civilians and the military. The question therefore is whether a particular division of responsibility is the one best suited to this country's needs. The division of responsibility proposed by the Armed Forces would be a satisfactory one only if the atomic bomb were similar to orthodox weapons. This of course is not the case. The development and storage of atomic weapons present problems which are very different from those presented by ordinary weapons and, in the Commission's view, the proposed transfer of custody of all stockpile items would impair this country's state of

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readiness for the immediately foreseeable future and would slow down new developments in the field of atomic weapons.

"4. Surveillance of atomic weapons is of an entirely different order of complexity and significance than is the case with even the most complicated ordinary weapons. Surveillance must be highly qualified and continuous in the case of atomic weapons if they are to function.

"(a) In the present relatively undeveloped state of atomic weapons, many technical improvements and ideas for new developments have come about and should continue to come about through continuous surveillance of the weapons in storage by those responsible for weapon design and fabrication. Surveillance is thus important to obtain, through continued and controlled observation of possible causes of failure, information for new designs and modification necessary to produce more efficient weapons. If the proposal of the National Military Establishment were put into effect, the Commission would not have the control necessary for rapid progress in improvements in atomic weapons and stockpiles. It is difficult to estimate how great this loss would be, but it would certainly be a significant one.

"(b) A special danger of a decision at this time to transfer custody away from the Atomic Energy Commission would be the tendency to confuse and retard the extensive program of substitution of new and improved components in all parts of the weapons in stockpile, made necessary by improvements either recently developed or expected to be developed by the Commission in the near future. For this reason alone, it is apparent that a maximum state of readiness cannot be maintained if custody of the entire stockpile is to be transferred, either on the schedule proposed by the National Military Establishment or soon enough in the future to justify making plans now.

"5. The Commission, of course, considers it essential that all steps be taken to assure a maximum state of readiness in the field of atomic weapons. Important steps have already been taken in this direction as follows:

"(a) The Commission makes available to the Armed Forces bomb components (non-nuclear) necessary to insure adequate training and familiarity with the weapons on the part of the Armed Forces.

"(b) The Commission is assisting in instructing Armed Forces weapon teams in field assembly and other operations which have to be performed at operational bases.

"(c) There is current a program of joint inspection

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of stockpile items by the Armed Forces and Commission personnel.

"(d) Continual improvement is being made in joint plans which were developed this April for the immediate delivery of atomic weapons to the National Military Establishment on the instruction of the President in the event he determines there is an emergency requiring such transfer.

"6. The Commission feels that the development and perfection of the measures outlined above have tended to become overshadowed by the more general discussions of the broad problem of custody. It is the Commission's considered judgment that further action along these lines is the best way of assuring both immediate readiness in the field of atomic weapons and a successful long-range program. Accordingly, the President may wish to instruct the National Military Establishment and the Atomic Energy Commission to intensify their efforts to develop and to complete these and similar measures.

"7. The Commission is, of course, prepared to discuss these matters with you in more detail.

"UNITED STATES ATOMIC ENERGY COMMISSION

"By

"David E. Lilienthal, Chairman"

It will be noted that this AEC document consists to a large extent of solemn warnings and of expressions of opinion which were opposed to those expressed by the Secretary of Defense, and, in some cases, were entirely unsupported. The warnings were presumably intended to persuade the President not to take any action, but they had no real bearing on the matters at issue.

The following items in the AEC memorandum are particularly worthy of note from the viewpoint of the National Military Establishment:

(1) The statement in the opening paragraph that the National Military Establishment proposed that the President issue an order for the "total transfer of all stockpile atomic weapons" gives, by the emphasis in the word "total", an exaggerated impression of the

NME's actual proposal, as the Secretary's letter clearly shows.

(2) In paragraph numbered 1 the AEC stated that transfer of the weapons presents "first and foremost a question of over-all policy for the determination of the President, and all technical questions are subsidiary". This was also the view of the NME. Yet the AEC then proceeded to devote most of their memorandum to the subsidiary technical issues.

(3) "The Commission believes that the proposed transfer would involve grave risks to this country's position in the field of atomic weapons and therefore impair to that extent the national security". This statement, in paragraph numbered 2, is indicated by the context as the conclusion which is to be proved by the statements which follow, but sound support for this statement cannot be found anywhere in the document.

(4) In paragraphs 4(a), 4(b), and 4(c), the Commission's memorandum enlarges upon the division of responsibility which they claimed would result from the NME proposal, and places emphasis on the absence of "control" by the Commission, which would be accompanied by "actual responsibility for surveillance" still remaining with the Commission. All this seems rather theoretical. It seems to disregard the serious division of responsibility which already existed, and the provisions of the NME proposal for continued surveillance, access to storage areas, and access to information by the Commission. The theoretical handicaps visualized by the Commission under the proposed

division of responsibility should be compared with the real handicaps to training, planning and war-time execution of plans described by the National Military Establishment.

(5) In paragraph 4(b) the AEC document states: "At present the Atomic Energy Commission is the only organization which can carry out effective surveillance for the purpose of insuring readiness of existing weapons." As an argument against the proposed change this might be regarded as analogous for example, to a statement, as an argument against substituting one employee for another, that the present incumbent is the only one who knows the combination of a safe. The NME had clearly demonstrated that its personnel were well qualified to take over the custodial responsibilities after suitable preparation.

(6) In paragraph 5, the AEC document describes the measures which had already been taken "to assure a maximum state of readiness", and, in paragraph 6, it recommends further action along these lines as "the best way of assuring both immediate readiness in the field of atomic weapons and a successful long-range program." The NME, on the other hand, regarded these measures as emergency arrangements only and did not consider them satisfactory. For example, the provision by the Commission of non-nuclear bomb components (described in paragraph 5(a)) was not regarded by the NME as sufficient "to insure adequate training and familiarity with the weapons on the part of Armed Forces" (as stated by the Commission - underlining has been added).

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The NME had emphasized that complete familiarity with a weapon, particularly one which was as highly complex as an atomic bomb, was absolutely necessary for personnel charged with its actual employment in combat. (See comment of Gen. Nichols on an earlier draft of the AEC document, in Memo to Mr. Carpenter, 7 July 1948, Ref. 52 ~~File 6-4-31~~.)

On 21 July 1948, this question of custody of weapons was presented to the President. Those present, with the President, were: the members of the Atomic Energy Commission, Chairman Lilienthal, Dr. Bacher, and Messrs. Pike, Strauss and Waymack; Secretary Forrestal; Secretaries Royall and Symington; Chairman Carpenter of the Military Liaison Committee; and Mr. William Webster. Mr. Carpenter presented the views of the National Military Establishment and Mr. Lilienthal presented the views of the Atomic Energy Commission. Mr. Symington and Mr. Royall also commented.

No decision was reached at that time, pending further study by the President; and it was understood that the President planned to confer with Secretary of State Marshall and possibly with the Cabinet as a whole. (See Memo for the Record, by Gen. Nichols, 22 July 1948, Ref 53, ~~"CUSTODY" File.~~)

On 23 July 1948, the President made a public announcement, as follows:

"As President of the United States, I regard the continued control of all aspects of the atomic energy program, including research, development and the custody of atomic weapons, as the proper functions of the civil authorities. Congress has recognized that the existence of this new weapon places a grave responsibility on the President as to its use in the event of a national emergency. There must, of course, be very close cooperation between the civilian Commission and the

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Military Establishment. Both the military authorities and the civilian Commission deserve high commendation for the joint efforts which they are putting forward to maintain our nation's leadership in this vital work." (See Memo to Chief, AFSWP, 7 September 1948, from Chiefs of Staff, ~~File 9-516~~ RESTRICTED)

e. Later Developments. In the light of the decision by the President, as quoted above, the Secretary of Defense, on 28 July 1948, wrote in identical letters to the Secretaries of the three Services, as follows:

"It is of utmost importance to the national defense that plans for the emergency transfer of atomic weapons be reviewed and steps taken to insure the most efficient transfer and utilization of these weapons in the event that their use is ordered by the President in an emergency."

He requested that steps be taken along these lines in the three Departments.

The Secretary of Defense also advised the Joint Chiefs of Staff of the situation, and requested the Chairman of the Military Liaison Committee to review and coordinate transfer plans of the National Military Establishment and the Atomic Energy Commission.

The three Chiefs of Staff, General Omar N. Bradley, Admiral Louis E. Denfield and General Hoyt S. Vandenberg, wrote a memorandum to the Chief of the AFSWP, on 7 September 1948, describing the foregoing actions and requesting him:

(a) "to review the technical requirements for the use of atomic weapons, as well as all aspects of the plans of the National Military Establishment for the transfer, custody and surveillance of atomic weapons to insure efficient implementation of such plans in the event that the President authorizes the use of these weapons in an emergency.

(b) "to take steps to train sufficient personnel to enable the NME to assume full custody and surveillance as soon as possible, if and when the President authorizes the transfer of such responsibilities to the NME."

(c) to submit "a report... in the near future on

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the present status of the above plans." (See Memo from Chiefs of Staff to Chief, AFSWP, 7 Sept. 48, ~~File C 516~~ Ref 54)

General Nichols reported to the Chiefs of Staff (in three identical memoranda) on 28 October 1948. He referred to a previous memorandum dated 3 September 1948, in which he had reported that current plans then in effect provided for an orderly turn-over of atomic weapons to the National Military Establishment in an emergency. He stated that these plans were under constant review and were modified in accordance with changing conditions in order to assure as far as possible their adequacy and completeness in the light of the Presidential decision on the matter of custody of atomic weapons. The plans called for turn-over of atomic weapons by units as required for use, and not blanket assumption of custody. He reported that the Air Force and the AFSWP had conducted three joint maneuvers during the few months preceding, in which the AEC had turned over the AFSWP atomic weapons (less fissionable material) required for the maneuvers, thus providing tests of various aspects of the plans for transfer. No difficulty had been encountered in any of these tests, and similar tests were scheduled to be conducted monthly in the future.

On the matter of training of personnel to assume custody and surveillance responsibilities, General Nichols defined "Custody" and differentiated, by definition, between "Operational Surveillance" (inspection) and "Development or Technical Surveillance".

He described the status of available personnel, the establishment of a supply agency at Sandia Base, the status of the storage sites, guarded by military personnel, and stated that insofar as custody was

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concerned, the AFSWP was capable then of assuming that responsibility.

With reference to operational surveillance (inspection) he described the status of the current inspection program, and the status of the available assembly team personnel, and concluded that "with the contemplated schedule for assembly team training, there should be adequate personnel available to initiate an inspection program when and if that responsibility is placed upon the National Military Establishment."

With reference to development or technical surveillance, defined as including laboratory and destructive tests, analysis of tests and inspection data, and determination of defects and preventive measures, General Nichols expressed the opinion that this should be a joint responsibility of the military and the AEC personnel as long as the AEC was responsible for development and production of weapons. He pointed out that the AEC at that time had not yet determined a well formulated surveillance program, but that the AFSWP was cooperating with the AEC in devising such a program and that it would probably be established some time in the spring of 1949. He described in general terms the personnel and organization required for the surveillance program, and concluded with the statement that "if and when the National Military Establishment is charged with production of atomic weapons the responsibility for development or technical surveillance can readily be assumed along with the responsibility for production." (See Memo from Gen. Nichols to each Chief, 28 Oct. 48; also, letter from Col. K. F. Hertford, Deputy Commander, Sandia Base, to Chief, AFSWP, 24 Sept. 48, Subject: AFSWP Custody and Surveillance; Ref. 55, 56 ~~both in File 0-513~~),

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f. Results. Although the efforts of the National Military Establishment to obtain custody of the completed atomic weapons failed of their direct object in July 1948, there can be no question but that these efforts produced, indirectly, at least one beneficial result. They accented the great importance of careful preparation for atomic warfare and of readiness for efficient transfer of the weapons to the armed forces if and when occasion should arise for their use; and they caused the Atomic Energy Commission to realize these factors more than they had ever done before. The Commission was placed in the salutary position of attempting to prove that they were right in their own contentions. In consequence, since July 1948, and continuing through the period covered by this volume of the History, the AEC ~~have~~ has made exceptionally successful efforts to cooperate with the AFSWP in developing the so-called emergency program for transferring weapons from the stockpiles and for training the AFSWP personnel for their reception and use.

It seems probable also that the activities described in this section have had the effect of making the Atomic Energy Commission realize the importance of devising at an early date, jointly with the AFSWP, a suitable program of "development or technical surveillance", and they have proceeded cooperatively along these lines also.

While these results cannot wholly take the place of the procedures contemplated and requested by the NME, and cannot insure the greatest possible protection to the national security, they undoubtedly tend to mitigate the dangers of the situation.

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SECTION 3.

OPERATIONS AND TRAINING DIVISION ~~(AFSWP-6)~~ (Ref. 57)

4-3-1. General.

The Operations and Training Division was one of the six original divisions of the Headquarters of the AFSWP authorized officially by the memorandum charter of 8 July 1947 (see par. 3-5e); theoretically, it may be said to have been in existence since the beginning of the AFSWP. This Division was originally charged with: the conduct or supervision of special troop units and special schools; the coordination of instruction in other service schools; assistance in the formulation of training doctrine; construction; weapon storage and surveillance. The charter described this Division as one "in which the Army, Navy and Air Forces have important interests" and specified that it would require a Chief and Assistants representing all three services.

The handling of construction work (at Sandia Base and at the storage bases) remained, technically, a part of the responsibility of this Division until about May 1948, when it was transferred informally to the Fiscal and Logistics Division, where it more logically belonged. The inclusion of this item among the responsibilities of the Operations and Training Division had been specified by General Groves, in his memorandum of 4 April 1947 to the Chief of Staff, U.S.A., and to the Chief of Naval Operations, primarily because of the particular personnel then available in his small starting organization. Actually - and attention is invited to the use of the word "technically" herein above - the Division as a whole did not have much to do with the construction work even before May 1948, as all

headquarters actions connected with this work before the transfer were handled by the Chief of the Division and the Executive Office, in direct communication with the officers in the field (at Sandia Base and at the Kansas City Area Office). Details of staff action on construction may be found in Section 4 of this chapter ("Fiscal and Logistics Division") and in the later chapters which deal with the field installations.

The responsibilities of this Division with respect to training were in general confined to offensive training; defensive training was, in a broad sense, the responsibility of the Radiological Defense Division.

The responsibilities of the Division in connection with the last two items listed in the charter, designated weapon storage and surveillance, have not reached the importance which was expected when the charter was constituted, because no atomic weapons have yet been turned over to the custody of the AFSWP. The duties of the Division in connection with these items have been confined for the most part to assisting the AEC and to keeping custody of such non-nuclear parts of the atomic bomb, and such mock-up bombs as are used for training purposes.

In practice, the activities of the Operations and Training Division have consisted mainly of: supervising special troop units concerned with operations and training; organizing and supervising offensive training courses of various kinds; planning operations; conducting or supervising - or cooperating in - maneuvers, tests and exercises; and processing the procurement of AEC classified training and handling equipment.

4-3-2. Special Troop Units.

The special troop units with which the Operations and Training Division has been concerned included, principally: the 38th Engineer Battalion (Special), which succeeded the 2761st Engineer Battalion (Special); the 8470th Technical Training Detachment; four Army Special Weapons Units, which succeeded the 38th Battalion; the 8460th Special Weapons Group; and various Navy and Air Force Special Units - all located at Sandia Base. (Other special troop units at Sandia Base, such as: the 8450th Military Police Group, concerned with security; the 4122nd Army Service Unit, Fourth Army Det., concerned with operation of the hospital; the U. S. Naval Administrative Unit; and the 1140th Special Reporting Wing, concerned with Air Force administration; were not under the supervision of the Operations and Training Division.)

a. 38th Engineer Battalion (Special).

On 1 September 1946, the 2761st Engineer Battalion (Special) had been formally activated at Sandia Base, as a result of an earlier recommendation for a Regular Army Unit to assemble and monitor the atomic bomb. (See Manhattan District History, Bk VIII, Vol. 3, Chap. 6, p.5.) This Battalion was redesignated the 38th Engineer Battalion (Special), effective 1 May 1947. (See M.R.Y, Ref. 32)

The Special Engineer Battalion was composed of: Headquarters; Headquarters and Service (H & S) Company; Company A; and Company B. Its authorized strength included 70 officers, 1 Warrant Officer and 397 enlisted men. It usually contained an average of about 60 officers, except for a short period when incoming officers were assigned to this Battalion instead of the 8470th Technical Training

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Detachment (see below). On 1 July 1948 the total strength was 59 officers and 254 enlisted men. All the officers were of the Army, but during July three Air Force officers were assigned.

In the beginning, the 38th Engineer Battalion (Special) conducted the training courses at Sandia, and all Army officers assigned to the Base for training were attached to it. Later, when the 8470th Technical Training Detachment was organized, the courses were conducted by that unit, and personnel who completed their training returned to the Special Battalion.

Except for fluctuations in strength, the organization of the Special Battalion remained unchanged until 20 December 1948, when the Headquarters, Company A, and Company B were deactivated. (The Headquarters and Service Company continued until it was inactivated on 13 April 1949.)

b. 8470th Technical Training Detachment.

The 8470th Technical Training Detachment was organized on 25 June 1948, and as of 1 July 1948 it was composed of 48 Army officers, 62 Air Force officers and 160 enlisted men. As its name implies, its major purpose was to conduct the special training courses at Sandia Base. This organization was divided, on 28 August 1948, into two units, of which one retained the original name and the other was named Detachment "B", 1140th Special Reporting Wing (see sub par g below). As of 31 December 1948, the total strength of the new unit was 50 Army Officers, 72 Army enlisted men, and no Air Force personnel.

c. Army Special Weapons Units.

On 20 December 1948, when the Headquarters and two companies (A and B) of the Special Engineer Battalion were deactivated, four Army Special Weapons Units were activated. These units were designated the 111th, the 122nd, the 133rd, and the 144th Special Weapons Units, and as of 31 December 1948 their total strength was 76 officers and 336

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enlisted men of the Army. They were composed of assembly teams which had completed their training.

d. 8460th Special Weapons Group.

The 8460th Special Weapons Group was organized two days later, on 22 December 1948, as a headquarters group for both administration and operational control of the Army Special Weapons Units, and for operational control (only) of the Navy and Air Force Special Weapons Units. As of 31 December 1948, the group consisted of 21 officers and no enlisted men.

e. Navy Special Weapons Unit.

On 15 November 1948, the 471st Navy Special Weapons Unit was activated, with 27 officers (and Warrant officers) and 35 enlisted men. This unit was established by Secretary of the Navy Restricted Letter, File Op24/cj, Serial 518 P 24, dated 13 October 1948. As of 31 December 1948, the strength of this unit was 27 officers and 35 enlisted men.

f. Air Force Special Weapons Units.

The 502nd and 580th Aviation Squadrons were activated 25 September 1948, and, as of 31 December 1948, the total strength of these squadrons was 51 officers and 107 enlisted men.

g. Detachment "B", 1140th Special Reporting Wing.

This unit, which split off from the 8470th Technical Training Detachment on 28 August 1948, was composed of the Air Force personnel who had been in that Training Detachment. As of 31 December 1948, its total strength was 169 officers, 1 warrant officer and 99 enlisted personnel.

Further, and more detailed, information about these special troop units may be found in Chapter 5 of this History.

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4-3-3. Training of Special Personnel.

The Technical Training Division at Sandia Base was initiated under the Manhattan District, and it came under the staff supervision of the Operations and Training Division of Headquarters, AFSWP, as of 1 January 1947. The purpose of this division was to conduct the training courses for the three services, at the Base. During the current period of this History four principal courses have been presented:

a. Bomb Commanders. The establishment of the Bomb Commanders course resulted from consultations, early in 1946, in which Major General C. E. LeMay, USAF, General Groves, Admiral Parsons, Dr. N. E. Bradbury (of Los Alamos), and others took part. By 31 December 1948, the rate of training had increased to twenty Bomb Commanders per month and a total of 261 (2 Army, 37 Navy and 222 Air Force) had completed the training. The duration of this course was three weeks. Refresher courses also were being given continuously and a total of 128 Air Force officers had taken them.

b. Weaponeers. From discussions early in 1946 between General (then Colonel) R. C. Wilson, General Groves, Admiral Parsons, and others, a Weaponeer course was initiated at Sandia Base. The first group of Air Force Weaponeers to undergo component training began their course of instruction on 24 March 1947. By 31 December 1948, this course provided for training Weaponeers at the rate of twenty-four per month, and a total of 162 (18 Navy and 144 Air Force) had completed the training. The duration of this course was six months. For these also refresher courses were being given continously, and a total of 117 Air Force officers had taken them.

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c. Assembly Teams.

The training courses for assembly teams were conducted, first, by the Special Engineer Battalion and later, after 25 June 1948, by the 8470th Technical Training Detachment, as explained in a previous paragraph.

The first Team course began on 2 February 1948, and Team course No. 2 began on 1 March 1948. Training of Assembly Teams for the Navy was initiated in February 1948, and for the Air Force in April 1948.

The course was of 6 months duration, and by 31 December 1948 a rate of training of approximately one Assembly Team per month had been established. As of 31 December 1948, a total of seven teams had been trained. (It was anticipated that a total of eleven teams would have been trained by 1 July 1949.) (Ref. 57)

The T/O called for 77 men per team, but the actual number was subject to considerable variation. 35 members of the team were trained for technical specialties, and the balance were supporting personnel.

The principal problem in conducting the training courses for Assembly Teams was the increasing difficulty of finding as candidates, from the services, individuals with the technical background required by established standards. With the expectation of improving the procedure and methods, the AFSWP contracted with the American Institute for Research, Cathedral of Learning, Pittsburgh, Pa., for a job analysis along industry lines. This contract was dated 14 August 1948, and Dr. John Clemans Flannagan, President of the Institute, was in process of having the analysis made when the year ended. (Ref. 41,57)

Dr. Harley Oliver Preston was the representative of the Institute who started to make the studies in the field.

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d. Staff Officers.

In June, July and August 1947, three General Officers Orientation Courses were conducted, of three days duration each. The first course was held on 10, 11 and 12 June, the second on 8, 9 and 10 July, and the third on 5, 6, and 7 August 1947. ~~(See Sandia Reports).~~ (Ref. 58) These courses were followed by the establishment of the Staff Officer Orientation Course, to be conducted once each month, with a duration of ~~five~~ four days each. The first of these was conducted 20 to 24 October 1947 and the second 1 to 7 December 1947. By 31 December 1948 a total of 300 officers (116 Army, 58 Navy and 126 Air Force) had taken this course, and at that time the course could accommodate 25 high level staff officers at one session. ~~(See App. A.)~~ (Ref. 41, 59) (On 27 October 1947, a one-day Orientation Course for Joint Staff members was conducted.) ~~(See Sandia Reports.)~~ ~~(Ref. 59)~~

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4-3-4. Other Training Activities.

a. At AEC Installations.

The Operations and Training Division has coordinated with the Atomic Energy Commission to provide on-the-job training at various Atomic Energy Commission Installations, for officers of the three services. This has been in line with the scheme which was proposed by Secretary of War Patterson in his letter of 30 December 1946 to Chairman Lilienthal of the AEC. (See par. 1-4i). As of 31 December 1948, there were a total of ten officers taking this training, including four (2 Army, 1 Navy and 1 Air Force) who still remained as survivors of the Manhattan District (ibid).

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b. At George Washington University.

A course in nuclear physics was arranged at George Washington University, for field grade officers of the AFSWP headquarters. This course started on 15 October 1947 and ended early in May, 1948, and it was completed by 21 officers (of 28 who registered).

c. In Civilian Postgraduate Courses.

At a series of conferences with General Staff representatives (Operations and Training, and Personnel and Administration), ~~in 1948,~~ the Operations and Training Division of the AFSWP reviewed and resubmitted, on 30 December 1948, officer personnel requirements for the ensuing three years. These requirements called for 79 Army officers to be educated to a Master's degree, in the civil schooling programs of the Army, in subjects relating to the field of atomic energy, such as Physics, Mathematics, Electronics, Chemistry, etc. A similar and equivalent influence was also applied statistically on the post graduate training programs of the Navy and the Air Force, by submission of position descriptions and tables of distribution of personnel of those services in the AFSWP organization, and approval thereof by the respective services.

d. "Military Atomic Energy Course".

A "Military Atomic Energy Course", consisting of one year at the Postgraduate School of the U. S. Naval Academy and one year at a qualified university, was proposed by General Groves and organized under his direction by the AFSWP. At the Postgraduate School a general refresher course was given, and study in atomic and nuclear energy subjects, and others related thereto, was planned for the university year,

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designed to qualify the students for a Master's degree. This course was instituted in the fall of 1947, with the intention of enrolling approximately 20 officers from the three services annually. As of 31 December 1948, 11 Army, 0 Navy, and 2 Air Force officers were enrolled.

In December 1948, the U. S. Naval Postgraduate School notified the AFSAP that a Master's degree would not be attainable by the procedure proposed for any of the students enrolled in this course. In view of this, and also because the course duplicated normal postgraduate training in the services, plans were made to discontinue further enrollment of officers from such a course and to continue the training of those already enrolled by returning them to the normal postgraduate training programs of their respective services (described in subparagraph (c) above). At the end of the year 1948, detailed implementation of this plan awaited the availability of the second-term academic marks of the enrolled students, which were to be obtained the following month, January 1949.

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e. Films.

A small atomic energy film library was built up at headquarters of the AFSWP for the use of this organization and of any other agencies desiring such facilities. As of 31 December 1948, there were about 55,000 still negatives and 650,000 ft. of motion picture film in this library. Including necessary duplicates, the total quantity of motion picture film was about 1,500,000 ft. Requests for films were coordinated with the Army Pictorial Service.

Consideration was given to the production of a training film along the lines of the British film, "Atomic Physics", but no definite action had been taken by 31 December 1948. (It was later decided that films projected by the Radiological Defense Division would make it unnecessary to produce this film.)

4-3-5. Activities in Support of Operations.

a. Assembly Teams.

The 4 Army, 1 Navy, and 2 Air Force Assembly Teams which had completed their training by 31 December 1948 formed a nucleus of seven teams available to support operations at the end of the current period of the History. A goal of ten teams had been prescribed by JCS paper 1745/5, dated 21 January 1948, to be attained by 1 January 1950, but this goal was expected to be exceeded before July 1949, as noted in paragraph 4-3-3c.

b. Maneuvers, Tests and Exercises.

In nearly every field of military endeavor, maneuvers, tests and exercises provide the most useful activities in peace-time preparation for actual operations, and in devising and testing improvements in equipment and techniques. The field of special weapons in which the AFSWP is involved forms no exception to this principle, and the AFSWP

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has taken part in initiating, planning, and executing a number of such operations during the first two years of its history. In connection with its operational functions, the Operations and Training Division has been concerned with all of these operations. Other divisions of AFSWP Headquarters have been also concerned with some of them, and the activities of other divisions in connection therewith will be mentioned in later sections of this chapter.

Some of these operations had been completed and some were still in the planning stage at the end of the current period. In a later chapter of this volume (Chapter 5) details will be given of the execution of each operation; its purpose and the results which it produced; and its organization and personnel. There is included here merely a brief enumeration of the maneuvers, tests and exercises, in each of two classifications: those which were completed and those which were planned as of 31 December 1948.

The distinction between a "maneuver" and an "exercise", as the terms are used herein, is primarily a matter of size, while the term "tests" is applied to those operations whose primary function is concerned with the trial of materials or weapons rather than their tactical use.

(1) Completed Maneuvers, Tests and Exercises.

(a) AJAX. A joint Air Force - Armed Forces Special Weapons Project field maneuver was executed at Wendover Air Force Base, Utah, 15-25 November 1947.

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(b) SANDSTONE. The AFSWP participated in the tests of Operation Sandstone, which were performed at the Eniwetok Proving Grounds by Joint Task Force Seven, in coordination with the Atomic Energy Commission. AFSWP assembly team personnel took part in these tests, and the AFSWP provided also security guards, technical assistance and a radiological safety task group. The participation of the AFSWP as a whole extended principally from September 1947 through June 1948.

(c) BANJO. A joint AF - AFSWP field exercise was executed at Walker Air Force Base, Roswell, New Mexico, during the period 12-21 July 1948.

(d) COWBOY. A joint field exercise in which the Air Force, the AFSWP, and the First Strategic Service Unit participated was executed at Davis Monthan Air Force Base, Tucson, Arizona, during the period 16 to 22 August 1948.

(e) NUTMEG. The AFSWP participated in a field exercise which was executed at Site Baker during the period 7 to 10 September 1948.

(f) WHIPPOORWILL. (Originally called "Drubbing"). A joint AF - AFSWP field maneuver was executed at Camp Campbell Air Force Base, Kentucky, during the period 7 to 20 October 1948.

(g) EASTWIND. A joint Navy - AFSWP field exercise was executed at Norfolk, Virginia, during the period 29 November to 3 December 1948.

(h) BESEECHER. A joint field exercise in which the Air Force, the AFSWP, and the Sandia Laboratory participated was executed at Site Baker and at Sandia - Kirtland Air Force Base during the period 6 to 14 December 1948.

(i) UNLIMITED (CAFE SWAP). A joint AEC - AFSWP command exercise was executed at Sandia Base during the period 14 to 20 December 1948.

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(2) Planned Maneuvers and Exercises.

(a) Monthly AF - AFSWP Exercises. Plans had been formulated before the end of the current period for the execution of monthly joint exercises or maneuvers by the Air Force and the AFSWP.

(b) Alaska. At the end of the current period plans were in course of preparation for a joint AF - AFSWP ~~maneuvers~~ exercise in Alaska. (This operation was cancelled later, after 1 January 1949.)

(Note: Much additional information must be obtained on each of the maneuvers listed above: the initiation and planning - by whom, when, etc.; description of what the meneuver consisted of; its purpose, the results obtained, or to be obtained, etc.; organization and personnel which took part; the role of O & T Division; etc., etc. Most of this information will be inserted in Chap. 7 but some of it should be inserted here also.)

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c. ~~(c)~~ Chickenpox.

The Operations and Training Division and the Development Division have participated with the Air Force and the AEC in the development of an air borne assembly laboratory to which the code name of "Chickenpox" has been given. This development will be described further in the section devoted to the Development Division.

d. ~~(d)~~ Transportable Buildings.

This Division has participated in programming the procurement of buildings transportable by air.

e. ~~(e)~~ Special Studies.

Special work of the division has included: a study on Clandestine Warfare for the Joint Chiefs of Staff and the Research and Development Board; technical assistance to the Joint Chiefs of Staff on the atomic operation phases of war plans; reports to the Military Liaison Committee; and transmission of information to the Navy and the Air Force to enable ~~that~~ those services to keep up to date on operations for war plans.

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4-3-6. Processing the Procurement of AEC Classified Training And Handling Equipment.

In June 1947 it was realized that the requirements for AEC classified equipment were not being met on schedule. At that time the Armed Forces Special Weapons Project was designated to act as a technical service of the National Military Establishment and to approve and consolidate all handling and training equipment requirements which must be obtained from the Atomic Energy Commission and to budget for and distribute all such equipment.

On 14 September 1948 the original equipment program was consolidated and forwarded to the AEC. This original program was for Fiscal Years 1949 and 1950, and was coordinated between Sandia Base Headquarters and Sandia Laboratories prior to forwarding to this headquarters.

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4-3-7. Organization and Personnel.

a. Chiefs.

Although the Operations and Training Division was not officially instituted until the issuance of the charter of the AFSWP on 8 July 1947, it may be said to have been in existence from the beginning of the existence of the AFSWP.

Colonel H. McK. Roper, U.S.A., served as Chief of the Division until 12 April 1947 (in addition to his duties as Deputy Chief of Staff of the AFSWP).

Lieutenant Colonel David B. Parker, U. S.A., served as Chief of the Division from 12 April until 19 August 1947.

Colonel H. R. Sullivan, U.S.A.F., served as Chief from 19 August 1947 until after 31 December 1948. (He was relieved on 15 January 1949 by Colonel L. S. Stranathan, U.S.A.F.)

b. Organization.

As of 31 December 1948, the Division consisted of a Chief, an Executive Officer, a Plans and Operations Branch and a Training Branch, and its personnel consisted of five officers (3 USAF and 2 USN) and two civilians.

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SECTION 4.

FISCAL AND LOGISTICS DIVISION (Ref. 60)

4-4-1. General.

The Fiscal and Logistics Division was another of the six original divisions of the Headquarters of the AFSWP which were authorized officially by the memorandum charter of 8 July 1947 (see par. 3-5f). This Division was originally charged with all "procurement and fiscal matters." From May 1948 it was charged also with construction work, at Sandia Base and at the storage bases (See par. 4-3-1). The charter specified that this Division must have representation of the Army, Navy and Air Forces.

4-4-2. Fiscal Activities.

a. Establishment of Working Fund Account.

As specified in the joint directive of the Secretaries of War and the Navy, 29 January 1947, and in the memorandum order of the Secretary of Defense which superseded that directive, 21 October 1947, and as specified also in the various implementing directives issued by the separate services (see par. 2-2), the funds for the AFSWP (other than for pay of military personnel) were to be provided initially from residue funds of the Manhattan District. It was originally assumed that some of these residue funds would be directly available, and on this assumption the joint directive of 29 January 1947 stated that the funds for the AFSWP would be provided from those of the Manhattan Project "which have not been transferred to the Atomic Energy Commission"; and the order of 21 October 1947 repeated this phrase verbatim.

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Under the provisions of the First Supplemental Appropriation Act, 1947, Public Law 663, 79th Congress, approved 8 August 1946 (one week after the enactment of the Atomic Energy Act of 1946) (Ref. 61), the President was authorized to allocate to such agencies as he might determine any part of the unexpended funds of the Manhattan District, for the purpose of carrying out provisions of the Atomic Energy Act of 1946. Actually, all unexpended funds of the Manhattan District were allocated to the AEC, and arrangements were made between the Secretary of War and the AEC for the Commission to advance funds to finance the AFSWP through the Fiscal Year 1948. By letter dated 13 February 1947, to the Secretary of War (Ref. 62), the AEC agreed to advance the sum of $20,000,000 to finance the AFSWP through 30 June 1947 and the sum of $25,000,000 for activities in the Fiscal Year 1948.

This procedure was recognized in the wording of War Department Memorandum No. 850-25-8, 18 March 1948, which stated that funds had been made available "by working fund advances to War Department from the Atomic Energy Commission, utilizing funds formerly available to the Manhattan Project". (See par. 2-2.)

On 18 February 1947, the General Accounting Office issued an Accounts and Procedures Letter No. 1129½, War Department No. 1730½ (Ref. 63), establishing a War Department working fund account 212/75925 1942/47, with limitations ".001 'Advances for AFSWP'".

b. Obligations and Expenditures.

For the period 20 February 1947 through 30 June 1947, there was obligated of the amount advanced by the AEC the sum of $6,648,190.40, with an accumulated expenditure of $2,814,006.59. For the operations of

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Fiscal Year 1948, the budget requirements did not exceed the unobligated balance remaining of the Working Fund advances of $20,000,000, and, in lieu of additional advances, the AEC authorized the use of the original advance for expenses of Fiscal Year 1948.

The accumulated obligations from 1 July 1947 through 31 December 1948 totaled #19,614,504.03 and the expenditures for this period amounted to $18,718,283.70. The balance which remained at the close of the Fiscal Year, 30 June 1948, was authorized by the AEC to be used for AFSWP construction upon their approval, and it was contemplated that the entire residue would be so expended.

The Manhattan District had been engaged in the construction of storage bases (classified), in conjunction with various District Engineers of the Corps of Engineers, U. S. Army (see Manhattan District History, Book I, Vol. 4, Top Secret Supplement, Storage Project), and had advanced to the Office of the Chief of Engineers the sum of $40,000,000 for this work. As of 1 January 1947 the AFSWP assumed the responsibility for the continuation of this project, in cooperation with the AEC. When it was found that $40,000,000 was not sufficient to complete the work, the AEC agreed to advance to the OCE, and did advance, additional sums aggregating $19,611,000, through 31 December 1948, for this purpose.

c. Confidential Funds.

The Atomic Energy Commission also provided the necessary funds for strictly confidential purposes for the period from 29 October 1947 through 30 June 1948, in the estimated amount of $5,897.98. After 30 June 1948, confidential funds were provided from the appropriation "Contingencies of the Army", subject to the approval

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of the Secretary of the Army, except for the expenditure of an unexpended balance of $1,111.22 from the aforementioned Atomic Energy Commission funds.

d. Budget for Fiscal Year 1949.

The budget requirements of the AFSWP for the Fiscal Year 1949 were incorporated in the Army's appropriations on oral instructions of the Bureau of the Budget and the Office of the Secretary of Defense. The Military Functions Appropriation Act, 1949, Public Law 766, 80th Congress (Ref. 64), appropriated funds for the National Military Establishment for the Fiscal Year 1949, and the Army Comptroller allocated $10,000,000 to the AFSWP from the funds "Contingencies of the Army" under that appropriation. Of this amount, $2,026,564.29 had been obligated on 31 December 1948. Normal operating supplies and equipment for the AFSWP were budgeted by the Technical Services.

e. Budget for Fiscal Year 1950.

A request for $17,528,500, in the appropriation "Contingencies of the Army", was submitted to the Bureau of the Budget, through the Army Comptroller, for the Fiscal Year 1950. After hearing the defense of this estimate by the AFSWP, the Bureau of the Budget allowed $14,339,000 (a reduction of about 18%), and no reclama was made by the AFSWP.

f. Transfer of Funds to the Chemical Corps.

The AFSWP transferred $500,000 to the Chemical Corps for research on the dissemination of radioactive agents. This action was concurred in by the Research and Development Group, General Staff, U.S.A., and by the AEC and the Research and Development Board. (See letter to Chief of Chemical Corps, Subject: "Funds for Radiological Warfare Munitions Development", 29 November 1948, file SWPSP-121.2 (Ref.65);

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see also Section 5 hereinafter.)

g. Transfer of Funds to the Signal Corps.

The AFSWP transferred $300,000 to the Signal Corps, to permit the immediate initiation and rapid expansion of a radiological instrument program. (See letter to Chief Signal Officer, Subject: "Funds for Radiological Instrument Program", 4 November 1948, file SWPSP-121.2 (Ref. 66); see also Section 5 hereinafter.)

h. Audits.

The Manhattan District had assumed the responsibility for all audits, in accordance with the authority contained in Army Service Forces Memorandum for the Secretary of War, Subject: "Auditing Property Accounts", dated 25 May 1945, and approved by the Secretary of War 28 May 1945, (Ref. 67). After the transfer of the property to the AEC, Superseding Certificates of Audit were prepared for all Certificates issued under the jurisdiction of the Manhattan District. The original Certificates of Audit, the Superseding Certificates of Audit, and all working papers are on file with the Fiscal and Logistics Division. (See also Manhattan District History, Book I, Vol. 5.)

The AFSWP requested the Army Audit Agency to assume the audit responsibility for the Project, and accordingly the San Antonio Regional Office ~~will~~ was to audit the accounts at Sandia Base and the Chicago Regional Office ~~will~~ was to audit those at Kansas City. These audits ~~will~~ were to include: Military Property and Sales Accounts; Civilian Pay Roll Records; Industrial Property Accounts; Current, Completed and Terminated Contracts; Salvage Accounts; and Records of Billing and Collection Offices. The audit of the Post Trust, Central Post and Motion Picture funds at Sandia

Base ~~is~~ was conducted by the Finance Office, Fourth Army. The Post Exchange and the Motion Picture activities at the Base were placed under the supervision of the Office of Special Services.

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4-4-3. Construction at Sandia Base.

a. General.

Construction at Sandia Base, during the period of control by the Manhattan District, had been performed by construction forces of R.E. McKee Company, General Contractor for Los Alamos, under contract with the Manhattan District, and had been paid for with Manhattan District funds. (See Manhattan District History, Book VIII, Vol. 3, Chap. 6.)

Construction at the Base was continued under the direction of the Office of the Chief of Engineers (Albuquerque District), and was paid for out of the working fund which was established for the AFSWP, for Fiscal Years 1947 and 1948, as described in a previous paragraph. (See par. 4-4-2a.) Further information on construction at Sandia Base may be found in Chapter 5, par. 5-11d.

b. Estimated Cost, FY 1947 and FY 1948.

It was estimated that the total cost of that portion of the construction which was to be paid for out of the working fund would be about $12,800,000, including the acquisition of the necessary land. An itemized list of the items involved, ~~is included in Appendix 9,~~ and further information on this construction, may be found in a later chapter. (See par. 5-11d.)

c. Construction Program, FY 1949 and FY 1950.

Originally the construction program for the Fiscal Year 1949 amounted to $9,986,000. Since the Army's Construction Authorization Act for that year had already been passed, it was deemed advisable to include the AFSWP construction with the AEC budget, and a letter to this effect was sent to AEC on 31 March 1948 (Ref. 68). This request was denied however, primarily because the Secretary of Defense felt that the

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requirements of the AFSWP should all be budgeted under the Department of the Army. Consequently, with the assistance of the Bureau of the Budget, a so-called "Crash Program" was established amounting to $6,422,000 (a reduction of more than 35%), which was passed by Congress without accompanying authorization legislation. This "Crash Program" included those items of construction which, in the opinion of the Bureau of the Budget, were of immediate need and could not be deferred until the next annual Construction Authorization Act. A list of the items involved is included in Appendix 9, and further information on this construction may be found in a later chapter.

In addition to the above, the sum of $1,281,200 was appropriated for the AEC, for the construction of facilities at Sandia Base for joint use by personnel of the AEC and the AFSWP. A list of these facilities also is included in Appendix 9.

The balance of the construction requirements for Sandia Base were incorporated in a request to the General Staff for inclusion in the Fiscal Year 1950 Construction Authorization Act. The amount requested was $13,300,000. In addition, the sum of $3,944,000 was requested for construction at the storage bases. (See letter dated 6 December 1948, Ref. 69).

d. Water Supply.

During the summer of 1948, it was determined that the supply of water from the City of Albuquerque would not be sufficient to meet the future needs of Sandia Base and Site "A" (the storage site near Sandia). A request was therefore submitted to the Chief of Engineers, on 10 September 1948, to drill test wells at Sandia Base to determine the availability of water to provide an independent supply for the two AFSWP installations. (Ref. 70). It was estimated

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that these tests would cost about $54,760, and the installation of the water supply system itself was estimated to cost about $1,000,000.

e. Family Housing.

In order to alleviate a serious shortage of family housing at Sandia Base, a request to lease 40 duplex houses and a motor lodge of 47 units in Albuquerque, New Mexico, was submitted to the General Staff in September 1948 (Ref 71). Because of the non - availability of funds, this request was disapproved on 13 October 1948.

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4-4-4. Construction of Storage Bases.

a. General.

The early history of the storage bases, through 31 December 1946, is recorded in the Manhattan District History, Book I, Volume 4, Top Secret Supplement, "Storage Project". The description there given includes: the initiation of the project by General Groves early in 1946; the survey of various possible sites by Colonel Hasbrouck and Colonel Roper; the choice of the first three sites, A, B, and C; the proposed possible fourth site and its indefinite postponement; the authorization of construction by the Army General Staff; the estimated cost of construction and the allocation of funds; the Architect - Engineer contract with Black & Veatch, of Kansas City, Missouri; the appointment of Lt. Col. Benjamin T. Rogers as Area Engineer with Area Office in Kansas City; the original plan for maintaining the security of the project and the division of the work into "Phase A" and"Phase B"; the general features of the original design and the proposed capacity of each site; the commencement of construction and the general progress which had been made in both design and construction as of 31 December 1946; and the retention of control of the storage project by the War Department when the Atomic Energy Commission assumed control, in general, of the Manhattan District's functions and property on 1 January 1947.

In Chapter 1 of this History (par. 1-4d.), the discussions between Secretary of War Patterson and Chairman Lilienthal of the AEC regarding the storage bases, and their status with respect to the AFSWP and the AEC, are described.

Some pertinent facts from the past history of the storage

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bases, will be repeated herein, for coordination and clarity in the presentation of the current history of this project, but the reader is directed to the Manhattan District History for detailed information of their beginnings. Further details of the bases will be found also in a later chapter of this History, which deals primarily with events in the field - this section of Chapter 4 is devoted primarily to events with which the Fiscal and Logistics Division of the Headquarters, AFSWP, was directly concerned.

b. General Description.

Briefly, the project consisted of the construction of three underground storage sites for atomic weapons and their components. Preliminary topographic survey and planning work was performed for the construction of a fourth site also, at the Rapid City, South Dakota, Army Air Base, but construction at this site was not authorized.

c. Location.

The location of the sites is as follows:

(1) Site A - Sandia Base, Albuquerque, New Mexico, a separate area of about 2700 acres;

(2) Site B - Camp Hood, Texas, a separate area of about 1500 acres;

(3) Site C - Camp Campbell, Kentucky, a separate area of about 2500 acres.

d. Facilities.

The construction at each site included the following:

(1) Underground storage and assembly rooms for atomic weapons.

(2) Roads and Utilities for servicing the sites

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(3) Patrol roads, electric and other fences, alarm systems, etc., for security.

(4) Permanent housing for police and technical personnel.

(5) Air strip capable of supporting B-~~29~~ 36 operations, except at Site A where such facilities already existed.

e. Technical Structures.

The number and type of underground structures to be erected at each site ~~are~~ were as follows:

(1) Site A - 41 storage structures; plant units I and II.

(2) Site B - 49 storage structures; plant units I and II.

(3) Site C - 24 storage structures; plant structures A,B, and C; plant structures, South Group (above ground).

All underground storage structures ~~are~~ were to be 20' x 60' reinforced concrete quonset type igloos, with a minimum of 30 feet of rock cover, where possible. In all cases, total cover ~~is~~ was to be at least 30 feet. Underground assembly areas ~~are~~ were to have a minimum of 100 feet of rock cover.

f. Costs and Funds.

The working estimate as of 31 December 1946 was about $40,000,000, and funds in this amount had been allotted to the Chief of Engineers, in the form of a working fund which, for security purposes, was not connected by an appropriation symbol or in any other manner with the Manhattan District. (Manhattan District History, Bk. I, Vol. 4, TS Suppl., p.8.)

As of 31 December 1948, the working estimate had increased to approximately $63,000,000, of which $59,611,000 had been received from the AEC (including the $40,000,000 allocated in 1946) and issued as a

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working fund to the Chief of Engineers. The balance of the funds required were to be requested from the AEC as needed, but in any event before 1 July 1949.

In addition, the sum of $1,135,000 had been set aside for the erection of family quarters, for 30 officers and 30 non-commissioned officers, at Camp Hood, Texas, for use of personnel assigned to Site B. These funds were realized from savings on construction items at Sandia Base, plus the elimination of certain items which were in the initial construction program. Authority for the erection of these quarters was received from the Secretary of the Army by letter dated 2 November 1948, File AGAO-S 620, GSGSP/C2.

The sum of $3,944,000 was submitted to the General Staff on 6 December 1948, for inclusion in the Fiscal Year 1950 Construction Authorization Act for the erection of additional facilities at the sites (see par. 4-4-3c above). These facilities included barracks, family housing, and recreation facilities for the sites, based on the assignment of two assembly teams to each site. (Later, $450,000 more was added to the request, for a pilot water purification plant, and then withdrawn.)

g. Security.

For security reasons, the construction at the sites had been originally divided into two parts called "Phase A" and "Phase B", as noted in par. 4-4-4a above. Phase A was to be that part of the work which could be carried out without revealing the purpose of the project, and was to include in general, the construction of airstrips, igloos or storage structures, barracks, fencing, roads, utilities, etc.; Phase B was to include the balance of the work, consisting principally of the deeply covered assembly structures and their equipment. (See Manhattan District History, Bk. I, Vol. 4, T.S. Suppl., p. 11.)

After construction was well underway, a third phase, "Phase C", was instituted, consisting of that part of Phase B which

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comprised the installation of equipment in the assembly structures. Phases A and B were given the code name, WATER SUPPLY, and Phase C was given the code name, NIAGARA.

The security plan under which the construction of the storage bases was carried out, as described in the Manhattan District History (Bk. I, Vol. 4, T.S. Suppl., pp. 11, 12), provided various other safeguards, such as: local security representatives of the Kansas City Area Engineer's Office; classification of various activities or parts of the project; means for maintenance of the security classifications; etc.

h. Progress.

As of 31 December 1946, the design work on the storage structures at all three sites, by Black & Veatch, Architect - Engineer, was well along toward completion (at Site A, about 50% complete; at Site B, about 85%; and at Site C, about 50%) and the design work on roads and utilities was also well under way (at Site B, about 45%; at Site C, about 20%). For construction, although some of the principal contracts had been let (in December 1946), not much actual progress had been made at the end of the year. (See Manhattan District History, Bk. I, Vol. 4, T. S. Suppl., pp. 16, 18, 19.)

As of 31 December 1948, the status of completion of the various parts of the work was as follows (where necessary, the percentages have been obtained by interpolation from the progress reports of 15 December 1948 and 15 January 1949):

Percentage Completed, 31 December 1948.

Site	Phase A	Phase B	Phase C
A	99%	45%	0%
B	100%	99%	0%
C	100%	[redacted]	0%

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4-4-5. Service Activities.

The service activities performed by the Fiscal and Logistics Division included the following:

a. Rations.

Authority was obtained on 28 October 1947, for Sandia Base to remain on the garrison ration system. (See 1st Ind., AGO, Department of the Army, dated 28 October 1947, Ref. 72.)

b. Communications.

The following activities, concerned with communications, were carried out by the Fiscal and Logistics Division, acting for the Operations and Training Division, under whose jurisdiction they properly belonged:

(1) A TWX line was established on 22 December 1947 between headquarters of the AFSWP and Sandia Base, via the Army Network. This system was supplemented on 12 March 1948 with SIGTOT crypto devices, which permit the safe transmission of highly classified messages. Unclassified operation began on 22 December 1947; classified operation began on 12 March 1948. (See 1st Ind., Hq. Army Security Agency, (17 Dec. 47), dated 29 December 1947; Ref. 73.)

(2) A TWX Communication Net was established on 1 April 1948 between Sandia Base, 4th Army, and Site B. In the event of expansion, this net can be increased with existing equipment to a total of 10 stations including Sandia Base. This net utilizes SIGABA crypto equipment. (Authority for this establishment was obtained by oral request to Army Security Agency through Capt. John Taylor, ASA Liaison Officer.) This net was extended to Site C on 17 December 1948.

(3) A TWX tie-line was established between Sandia Base and Kirtland Air Force Base. This line placed all TWX traffic to Sandia over military, rather than commercial, lines, with resulting economy to

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the Government. (Authority for the establishment of this tie-line was contained in 1st Ind., Office of Chief Signal Officer, (13 July 48), dated 2 August 1948; Ref. 74.)

(4) Cryptographic equipment was obtained from the Army Security Agency for AFSWP field exercises conducted with Air Force and Navy units. (See 2nd Ind., Hq. Army Security Agency, (13 Aug. 48), dated 16 September 1948; Ref. 75.)

(5) A telephone toll line was established (on 19 January 1949) from Site C to St. Louis, Missouri. (Authority was obtained by oral request to the Signal Corps through Lt. G. E. Wilson, Engineering and Commercial Branch, Army Communications Service Division.)

c. Guard Dogs.

A guard dog breeding program was established which would result in economy to the Government and would provide a sufficient stock of quality dogs to fill the requirements of the AFSWP. (Authority was contained in 2nd Ind., OQMG, War Dogs, dated 26 March 1948; Ref. 76.)

d. Quartermaster Laundry.

Authority was obtained, and equipment was procured, for the establishment of a fixed Quartermaster Laundry at Sandia Base. The AEC furnished funds to cover the cost of construction of the building, and the AFSWP was to obtain supplies and funds for operation from the QMG. (Letter of authority dated 6 August 1948, Ref. 77.)

e. Bus Service.

Authority was obtained on 15 September 1948 from the Chief of Transportation for Sandia Base to continue intrapost bus service, bus service to Kirtland Field, and bus service to enlisted men's housing units, Belen, New Mexico, during Fiscal Year 1949 (Ref. 78).

f. Post Commissary Privileges.

The Commanding General, Sandia Base, and the AEC requested

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the extension of Post Commissary privileges to civilian employees of the base who resided off the base, but this request was disapproved by the Director of Logistics, GSUSA. (See 2nd Ind., AGO (30 July 48), dated 15 September 1948, Ref. 79.)

4-4-6. Supply.

a. Agreed Procedures.

At the beginning of, and during, the Fiscal Year 1948, several conferences were held in Washington by representatives of the AFSWP, the technical services, and the War Department General Staff, Service, Supply and Procurement Division, concerning supply policies and procedures for the Project. The following supply procedures were authorized for the AFSWP and agreed to by all concerned:

(1) The AFSWP would utilize the existing supply facilities of the services insofar as was practicable, (Ref. 80).

(2) The AFSWP was in the category of a Research and Development Project, and, as such, should requisition supplies and equipment from the technical services in accordance with War Department Memorandum 35-45 (later rescinded by WD Memo 700-15-5, which contained the same provisions) (Ref. 81). Such supplies and equipment were to be furnished on a non-reimbursable basis if the issue would not deplete the service's existing stocks. (Ref. 82)

(3) All supplies and equipment which were not approved for issue under the above program would be issued on a reimbursable basis, except items required for troops. Conforming with instructions of the Army Comptroller, the AFSWP began requisitioning routine supplies and

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equipment from technical services on a non-reimbursable basis starting 1 July 1948. All items of equipment and supply which are required for troop use would be furnished by the technical services concerned on a non-reimbursable basis. The AFSWP would not budget nor pay for equipment procured from the technical services for T/O & E units assigned to the Project. (See 1st Ind., from Director of SS & P, GSUSA, dated 31 October 1947; Ref. 83.)

(4) In order to expedite the flow of supplies, authority was granted for Sandia Base to submit its requisitions directly to the nearest appropriate depot, for all non-controlled items supplied by the Engineers, Signal Corps, Medical Department, Ordnance, Quartermaster, and Air Force. All requisitions for controlled items would be submitted through the Headquarters, AFSWP, to the Chief of the technical service concerned. (Oral authority obtained from each technical service, and TM 38-400, dated February 1947; Ref. 84.)

(5) Sandia Base was exempt from the Army Stock Control Plan for security reasons. The Base would advise the services of its stock levels by means of reports, without actual inspection. (Ref. 85)

(6) In the event the technical services could not supply any item on a requisition, Sandia Base was granted authority for procurement through commercial channels. (Authority was implied because of Prior Procurement Authority and funds supplied to the AFSWP for special purposes.)

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(7) The AFSWP would submit a list of requirements of major items of equipment to the technical services for each Fiscal Year. These requirements would be screened by the Logistics Division, GSUSA, and, if approved, would be included in the Supply Control System of the technical services concerned. (Oral instructions from Log. Div., GSUSA.)

(8) Because of the specialized nature of the mission of the AFSWP, with assigned duties comparable to the Mobile Reserve, the Project had obtained supplies and equipment from the technical services under a blanket 1A1 priority. This priority rating was contained in the Supply Supplement to the Troop Program. (See DF from Dir. of Logistics, dated 30 March 1948; Ref. 86.)

b. Field Procedures.

(1) A Supply Procedure was established for Sites B (Baker) and C (Charlie). (Ref. 87)

(2) A Supply Procedure was established for Sandia Base. (Ref. 88)

c. Inventory.

An inventory was conducted, as of 30 November 1948, of all major items of Army equipment on hand at all AFSWP installations in accordance with an Army-wide Inventory Plan. (Ref. 89)

d. Special Supply Activities, Fiscal Year 1948.

Special supply activities accomplished through the Fiscal and Logistics Division during the Fiscal Year 1948 included the following:

(1) The supply of specialized equipment for the classified

field exercises conducted by the Air Force and the AFSWP at Wendover Field, Utah, in November 1947, was procured and expedited. (Ref. 90)

(2) A special issue of ammunition in excess of authorized allowances was procured, to be held at Sandia Base as an emergency measure. (Ref. 91)

(3) A special issue of arctic and tropic clothing was procured for the units of the 38th Engineer Battalion (Special), stationed at Sandia Base. Units of this organization remained on a semi-alert basis in accordance with their prescribed mission. (Ref. 92)

(4) A special issue of equipment was procured for the 8450th Military Police Group, whose mission was to afford security protection to Sandia Base. (Ref. 93)

(5) A special issue of equipment was procured, and the necessary movement arrangements were made, for the Special Military Police Company organized at Sandia Base for duty overseas with "Operation Sandstone". (Ref. 94)

(6) The necessary maintenance equipment was procured to place Sites B and C in operation. (Ref. 95)

(7) The necessary textbooks were procured for students of the armed forces attending the "Radiation Hazards Course" at the University of Chicago. (References are in Central Files.)

(8) Items of electrical equipment were procured from the War Assets Administration through the Joint Army Navy Machine Tools

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Committee (JANMAT). This equipment was in critically short supply and was required for construction at the Sites. (Ref. 96)

(9) Mess hall and barracks furniture and equipment, for the new buildings at Sandia Base, were procured. (Ref. 97)

(10) The necessary texts were procured for Army and Air Force students attending the Radiological Defense Course at the University of California. (Ref. 98)

(11) The special equipment required for the Radiological Defense Course at the University of California was procured. (Procurement, installation, and accountability details are covered in AFSWP Contract No. W 49-146 XZ-1; (Ref. 99.)

(12) Assistance was rendered to Sandia Base in the procurement and processing of dogs required for guard duty at that station. (Ref. 100)

(13) Supply action was initiated with the technical services, on equipment required for Phase C at Sites B and C. Phase C will be explained in a later chapter of this History, dealing with the storage bases. (Ref. 101)

4-4-7. Procurement.

From 1 January 1947 until 29 February 1948, all procurement activities of the AFSWP outside of military channels were carried out in accordance with the War Department Procurement Regulations and by the authority delegated to General Groves under Executive Order 9001, dated

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(Ref.102).

27 December 1941. This authority was delegated to General Groves by Under Secretary of War Royall by two memoranda; the first, dated 25 April 1947, stated that the delegation of authority was effective from 1 January 1947 until 30 June 1947, subject to possible extension at that time; the second, dated 27 June 1947 extended the delegated authority from 1 July 1947 until 30 June 1948, subject to possible extension again at that time. Both memoranda described the powers delegated to the War Department by Executive Order 9001, by the words: "to enter into contracts and into amendments or modifications of contracts heretofore or hereafter made, and to deviate, where necessary, from War Department Standard Forms of contracts, and to make advance, progress, and other payments thereon, without regard to the provisions of law relating to the making, performance, amendment, or modification of contracts." ~~(See App. 22.)~~ (Ref.103)

After General Groves' retirement on 29 February 1948, all procurement was accomplished under Joint Procurement Regulations dated 1 November 1947 (Ref.104). After Public Law 413 became effective on 19 May 1948 (Ref.105), all procurement activities of the AFSWP were conducted in accordance with the "Armed Services" Procurement Regulation, dated 19 May 1948. The majority of the supplies and equipment required by the AFSWP during the rest of the year 1948 was obtained from Military Services; therefore, commercial procurement for the Project was concentrated principally on specialized supplies and equipment peculiar to the Project's activities, which were not stocked nor procured by other military agencies.

The following important procurement functions were carried out during this period:

a. The Secretary of the Army's approval was obtained on contracts

for eight Transportable Prefabricated Special Purpose Buildings, 4 August 1948. (See 1st Ind., from Dir. of Logistics GSUSA, Ref. 106.)

b. The Secretary of the Army's approval was obtained on a contract with American Institute for Research, Inc., Contract No. W29-044-XZ 201, dated 14 August 1948, for the analytical survey of the Assembly Teams (Ref. 107). (See par. 4-3-3c)

c. A request that the AFSWP be designated a procuring activity was forwarded to Director of Logistics, GSUSA, 9 August 1948, and thence to the Brannon Ad Hoc Committee for consideration. (Ref. 108)

d. All contracting officers of the AFSWP were notified of the Voluntary Steel Allocation Plan which involved the voluntary setting aside for the armed forces of certain scheduled capacities by steel suppliers. (See DF from Logistics Div., GSUSA, dated 30 August 1948; Ref. 109.)

e. The Secretary of the Army's approval was obtained on a contract for twelve additional Transportable Prefabricated Special Purpose Buildings, 15 December 1948. (See 1st Ind., from Dir. of Logistics; Ref. 110.)

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4-4-8. Organization and Personnel.

The original charter of the AFSWP stated, with respect to the Fiscal and Logistics Division: "It will require a Chief and Assistants including a trained Finance Officer, and at least one officer experienced in procurement. This Division must have representation of the Army, Navy, and Air Forces."

a. Chiefs.

The first Chief of the Fiscal and Logistics Division was Lt. Col. Gordon B. Page, USA, who served until May 1948, when he was succeeded by Lt. Col. S. M. Welsh, USA. Colonel Welsh continued as Chief of the Division until after the end of the current period of this History.

b. Organization.

As of 31 December 1948, the Division consisted of: the Chief, Colonel Welsh; a Fiscal Branch headed by Lt. Colonel E. W. Jones, with Captain D.F. Riordan, Ord, USA, as his assistant; FD, USA; a Budget Branch, headed by Lt. Cmdr. T. L. Hughes, USN; a Service Supply and Procurement Branch, headed by Captain W. B. Carne, USA; and a Construction and Land Branch, headed by Captain M. R. Tannen, USAF.

c. Total Personnel.

As of 31 December 1948, the personnel of the Fiscal and Logistics Division was composed of six officers (4 USA, 1 USN, and 1 USAF) and three civilians, a total of 9 persons.

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SECTION 5.

RADIOLOGICAL DEFENSE DIVISION. ~~(APP. 10)~~ (Ref. 111)

4-5-1. General.

One of the six original divisions of the Headquarters of the AFSWP, authorized officially by the memorandum charter of 8 July 1947, was the then-named Radiological Safety Division (see par. 3-5h). This Division was charged in the charter, as amended by the order of the Secretary of Defense dated 21 October 1947 (see par. 2-4), as follows: "This Division, by direct participation or by exercising staff supervision," will coordinate "through established agencies the radiological safety measures of the Armed Forces", "including such matters as the use of radioactive materials as contaminants, the decontamination of areas, development of protective clothing and protective medications, development of detection instruments and assistance to the Surgeon Generals" of the Army, the Navy and the Air Force "in development of treatments of the sick and wounded resulting from atomic warfare." Although it was not specifically mentioned in the charter, a necessary concomitant of the responsibilities prescribed was training in radiological defense, and this early became an important activity of this Division.

On 5 February 1948, the name of the Radiological Safety Division was changed to Radiological Defense Division (AFSWP Administrative Memorandum No. 5)(Ref.112.), In general, the latter name of the Division will be used hereinafter throughout, regardless of whether events referred to occurred before or after 5 February 1948.

Although this Division may be said to have existed, in

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1949. A total of $3,433,000 was allocated for the work of the Radiological Defense Division for this fiscal year, and this permitted the AFSWP to finance the radiological defense activities for which it was responsible, transferring funds, as needed, to other agencies (the Chemical Corps, the Signal Corps, the National Bureau of Standards, etc.) for carrying out their parts of the work. (~~See File 110.01 Budget, RD Div.~~ Ref. 114; see also Section 4 of this chapter.)

The activities of the Division may be divided logically into classifications which correspond to the five branches which constituted its organization at the end of the current history period: Radiological Defense Training; Defense Material; Medical; Operational Development; and Technical (including Radiological Warfare, which was first the responsibility of a separate branch and later merged with the Technical Branch). Accordingly, the descriptions which follow are grouped appropriately under these headings.

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4-5-2. Radiological Defense Training. SEC[redacted]ON

The training activities of this Division, (carried on through its Training Branch) were entirely defensive and must be distiguished from the offensive training which was the responsibility of the Operations and Training Division.

At the beginning of the period covered by this History, few outside of the personnel who had served with the Manhattan District and the personnel who had participated in Operation Crossroads had any real knowledge of radiological effects or of radiological defense, in the sense here used. Even the knowledge of these personnel was incomplete and inadequate, as study of the Manhattan District History will show. The research and development work of the Manhattan District on these lines had been aimed principally at the protection of the workers who were engaged in the development and production of the bomb and was not aimed

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at protection against an enemy (See Manhattan District History, Book I, Vol. 7, Medical Program). Some thought and study had been devoted to the possible need of radiological protection of the Allied troops at the beginning of the European invasion, but the results were simple in the extreme (Ibid., Book I, Vol. 14, Foreign Intelligence Supplement).

Considerable thought and study were devoted to the subject of radiological protection in preparation for, and during the execution of, Operation Crossroads (Ibid., Book VIII, Vol.3, Chap. 8), and as a result of the experience gained in that operation the need for an extensive training program became apparent. In the institution of this program and in carrying it out, the AFSWP and its Radiological Defense Division took a leading part.

a. Joint Radiological Safety Training Committee (JRSTC).

Joint Chiefs of Staff Memorandum SM-7864, dated 25 March 1947, directed the Chief of the AFSWP to organize the Joint Radiological Safety Training Committee (JRSTC), to carry out recommendations of the Joint Crossroads Committee with respect to the problem of joint radiological defense training. (Ref. 115)

Captain F. I. Winant,Jr., U.S.N., Chief of the Radiological Defense Division, was appointed Chairman of the JRSTC by General Groves, Chief of the AFSWP, on 14 July 1947, and General Groves, in a memorandum of that date addressed to Captain Winant (Ref. 116), laid down a precept for the committee, stating its organization, objective, membership and procedure. The membership was selected from the armed services and the AFSWP, and from the U. S. Public Health Service, the Veterans Administration, and the Atomic Energy Commission. The committee held its first

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meeting on 15 July 1947. At this and subsequent meetings, the work requirements of the committee were divided and precepts were issued for the following subcommittees:

National Organization

Armed Forces

Medical

Terminology

Schools (and Interim Schools)

Steering

These subcommittees were directed to explore problems of radiological defense training and related matters as indicated by the subcommittee titles, reporting their results as recommendations to the JRSTC. The JRSTC, by its precept, was directed to report overall recommendations on the subject of joint radiological safety training to the Joint Chiefs of Staff, through the Chief of the AFSWP. During the Fiscal Year 1948, all the subcommittees submitted reports to the JRSTC, and, subsequently the Steering Committee, using the reports of the subcommittees as a guide, drafted a final JRSTC Report, which was unanimously approved by the committee as a whole on 16 November 1948 (Ref. 117). This final report was submitted to the Chief of the AFSWP but it had not been approved by him at the end of the current period of this History, 31 December 1948. Nevertheless, this JRSTC Report is of considerable importance as a part of the history of the Radiological Defense Division for this period, especially as it had been implemented to a large extent, prior to approval, by independent actions of the Army, the Navy, and the Air Force. At the time of submission of the final report, the membership of the committee

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consisted of 3 members from each of the three services, 3 members from the AFSWP, and the following associate members: 20 Army, 16 Navy, 3 Air Force, 7 AFSWP, 3 USPHS, 2 AEC, and 1 VA - a total of 64 members and associate members.

The "Highlights of JRSTC Recommendations" are listed in the report as follows:

"1. Joint doctrine in training throughout the services. Joint schools at the technical level.

"2. Three levels of Radiological Defense Training:

a. Advanced Education - college postgraduate study Master Degree level.

b. Technical Training - short courses in service technical schools.

c. Indoctrination - presentation of basic minimum radiological defense information to all service personnel and to the civilian public.

"3. Medical and non-medical training to be parallel.

"4. Regular and reserve component training to be parallel.

"5. Universal radiological defense language, techniques, and equipment.

"6. Military support of Radiological Civil Defense."

In the subparagraphs which follow, brief summaries are given of the major features of the individual reports of the subcommittees, which were the basis of the final report of the committee as a whole.

[redacted]

(1) National Organization Subcommittee.

This subcommittee concluded that radiological defense training of the general public should be a responsibility of a civil defense organization when established. It was recognized, however, that the armed forces had a fundamental interest in civil defense and it was recommended that they be prepared to advise, assist, and augment radiological defense and training which might in the future be administered by such a civil defense agency.

It was also recommended that the armed forces be prepared to assume responsibility for adequate civil defense until such time as a civil defense agency should be in existence, without diversion of the armed forces from accomplishment of their primary mission.

(2) Armed Forces Subcommittee.

The Armed Forces Subcommittee established organizations, and positions within the individual armed services, for which radiological defense training would be required, including determination of totals of personnel to be trained. After the submission and approval of the Armed Forces Subcommittee Report, it became apparent to the JRSTC that the basic facts set forth in the report continued to be reliable but that the stated totals of Army and Air Force personnel must necessarily be adjusted considerably upward, to numbers which would be comparable to those proposed for the Navy. As proposed in the report, the requirements for the Navy would have totalled 37,273 personnel, with those for the Army only 4,809 and for the Air Force only 270.

(3) Medical Subcommittee.

This subcommittee recommended that training in the

medical aspects of radiological Defense be fostered along the lines of a line-medical team arrangement.

(4) Terminology Subcommittee.

This subcommittee concluded that, with the exception of certain terms of interest to the military only, glossaries of definitions concerned with nucleonics, nuclear physics, radiological defense, and allied scientific subjects should be obtained from scientific organizations already engaged on the composition of such glossaries - the American Society of Mechanical Engineers, the American Medical Association, the American Institute of Electrical Engineers, and other organizations of this kind. After the submission and approval of the report of the Terminology Subcommittee, the National Research Council organized a conference of those organizations which were engaged in the composition of a glossary and invited the AFSWP to attend and participate in the coordinated program.

(5) Schools (and Interim Schools) Subcommittee.

This subcommittee originated and organized certain interim training schools and programs (which are described hereinafter) and formulated a final report to the JRSTC, which established three distinct levels of training. These are: Advanced Education, involving postgraduate college work; Technical Training, involving attendance of the armed forces personnel at special joint technical schools for short courses; and Indoctrination, involving dissemination of basic radiological defense data to all personnel in the armed forces. This subcommittee, in formulating its report, coordinated the reports and recommendations of all other JRSTC subcommittees.

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(6) Steering Subcommittee.

During the existence of the JRSTC, the Steering Subcommittee supervised procedures within the Committee as a whole ~~JRSTC~~ and compiled the final JRSTC Report, using as a guide the various final subcommittee reports ~~to~~ [redacted]. The JRSTC became inactive, but did not go out of existence, upon the completion, and submission to the Chief of the AFSWP, of its final report.

b. Interim Schools and Training Programs.

During the current period of the History, from the activation of the Training Branch of the Radiological Defense Division, on 24 September 1947, until 31 December 1948, that Branch ~~has~~ implemented and coordinated several interim radiological defense training measures. These interim schools and training procedures were organized on recommendations of the joint services, the JRSTC, and its subcommittees. The overall training program thus developed followed three general levels: three-years Advanced Courses, covering nuclear physics and defense measures intended to train line officer personnel in radiological defense, to assume positions on high level planning staffs, paralleled by a one-year curriculum in the medical aspects of atomic energy, to train medical officers for similar staff positions; six-weeks Technical Training Courses for radiological defense officers, with a parellel program for medical officers at this level; and Indoctrination Training in radiological defense for the remaining personnel of the National Military Establishment. These three parts of the program are described in the sub-paragraphs which follow.

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(1) Advanced Courses.

The Radiological Defense Engineer Postgraduate Course was organized, and a pilot group of students was started on this course, in the fall of 1947. Academic and financial arrangements for this course were coordinated by the AFSWP between the joint services, the U. S. Naval Postgraduate School, and the University of California.

In June 1948, the pilot group of 14 officers who had successfully completed the first academic year at the Naval Postgraduate School were transferred to the University of California for the second and third postgraduate years of the course.

A second postgraduate group from the joint services, consisting of 36 officers (14 Army, 11 Navy, 8 Air Force, 1 Coast Guard, and 2 Public Health Service), was ordered to report for instruction at the U. S. Naval Postgraduate School in June 1948.

In May 1948, the first group of medical officers completed postgraduate training in medical aspects of radiological defense, at the University of Chicago, and then returned to positions in their respective services. This group consisted of 16 officers (4 Army, 0 Navy, 10 Air Force, and 2 Public Health Service).

During the Fiscal Year 1949, the defense medical training was being conducted at four regional centers, in connection with the AEC Fellowship Training Program in the medical aspects of atomic energy.

Various institutions cooperated in the training program at each of the regional centers, as follows:

(a) At Duke University, Durham, North Carolina.

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The University of North Carolina, North Carolina State College, and Wake Forest College took part with Duke University, at this center;

(b) At the University of Denver, Denver, Colo. The University of Colorado, took part, with the University of Denver, at this center.

(c) At Reed College, Portland, Oregon. The University of Oregon, and Oregon State College took part, with Reed College, at this center.

(d) At Rice Institute, Houston, Texas. Baylor University took part, with Rice Institute, at this center.

Those enrolled were to complete a six-months course at the four centers in the spring of 1949 and were to continue their training for a six-months period at the AEC installations at Oak Ridge, Tennessee.

(2) Technical Training Courses.

At the technical level, the Radiological Defense

[redacted] California, Training Course at Treasure Island, originally established by the Navy, was, through Navy participation in the JRSTC, incorporated in the overall joint radiological defense training program. This course was the pioneer training effort. The establishment of a parallel school, patterned after the Treasure Island course and administered by the Army, was sponsored by the AFSWP and the Navy in October 1947, at the Chemical Corps School, Edgewood, Maryland. At this time the AFSWP, in accordance with its charter, took an official interest in these two schools and in the standardization of their curricula. A third school at this level, also under the sponsorship of the AFSWP, was established in November 1948 by the Air Force, at Keesler Air Force Base, Biloxi, Mississippi.

Each of these three schools had a capacity for training approximately forty officers, assigned by the three services, for each seven-weeks period. As of 31 December 1948, the following total numbers of students had been graduated from the three schools:

Army	~~214~~	206
Navy	~~287~~	253
Air Force	~~179~~	76
Public Health	~~14~~	5
Coast Guard	~~6~~	8
Civilians	~~22~~	57
Total	~~782~~	605

Recommendations made by the Schools Subcommittee in their report to the JRSTC, and incorporated in the final JRSTC Report, proposed a shortened practical Radiological Defense Officers Course, at the technical level, to train assistants to the Radiological Defense Officers of the three armed services. Additional courses recommended

were: for instrument technicians; for laboratory technicians, both medical and scientific; for training of enlisted personnel in photodosimetry; and for technical level training in medical aspects of radiological defense. It was planned that all courses at this level of training would be conducted in joint service student groups, using curricula standardized by the AFSWP.

Before the end of the year 1948, the Army Chemical Center Radiological Defense School had incorporated in its curriculum a three-weeks course for Damage Control officers (Navy), and had adapted this curriculum for the technical training of medical officers in courses already in progress.

Brooks Medical Center, Fort Sam Houston, Texas, had incorporated in its basic medical training curriculum a similar three-weeks course in the medical aspects of radiological defense and had formulated plans to activate a joint school in April 1949.

(3) Indoctrination Training.

Programs of indoctrination ~~have been~~ were organized and implemented by each of the armed services, and the AFSWP ~~has~~ participated in these programs of indoctrination in several ways.

(a) The AFSWP organized and sponsored a coordinated lecture series for the indoctrination of senior officers for presentation at the following institutions:

National War College

Industrial College of the Armed Forces

Armed Forces Staff College

Command and General Staff College

Naval War College

Air University

This course of lectures was also offered to senior officers on duty in the Pentagon.

During the fall of 1947 and the year 1948, lectures were given by selected personnel from the AFSWP as follows: at the Air University, two lecture series, to about 1,000 students; at the Naval War College, one lecture series, to about 150 students; and at the Pentagon, one lecture series to about 100 senior officers.

It was planned to continue to offer the presentation of these lectures at all the institutions listed above.

(b) The AFSWP sponsored the formulation of a coordinated indoctrination lecture series for presentation by trained school faculty members in long term service schools of the armed services. This series was drafted by the Joint Radiological Defense School at Edgewood, Maryland. This series was reviewed by the AFSWP and at the end of the current period of the History it was in the hands of the Radiological Defense School at Edgewood and of the Chemical Corps, for final revision and distribution to the armed services.

(c) In conjunction with the instructor staff of the School at Edgewood, with the Bureau of Personnel of the Navy, with the Director of Organization and Training of the General Staff, U. S. Army, and with the Director of Training and Requirements, Hq. USAF, the AFSWP coordinated the drafting of an extension course in radiological defense, to be presented in the three services. In conjunction with this extension course, the services commenced education of reserve component officers

at both the indoctrination and the technical training level, by the conduct of frequent two-weeks courses at the radiological defense training schools at Treasure Island and at Edgewood. During the summer of 1948, these courses were given to the following numbers of officers: at Edgewood, to 43 officers (30 Army, 8 Navy, and 5 Air Force); at Treasure Island, to 111 officers (50 Army, 50 Navy, and 11 Air Force).

(d) In joint courses conducted at the Walter Reed General Hospital and at the Naval Medical Center, Bethesda, Maryland, a total of 785 medical officers and civilian doctors were given an interim indoctrination in medical aspects of radiological defense.

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c. Other Training Activities.

The Radiological Defense Division, through its Training Branch, carried out a number of other activities concerned with the promotion of radiological defense training, which were not directly related to specific schools or courses, including the following:

(1) Joint Cross Roads Committee Radiological Defense Manual, Volume I. 35,000 copies of this manual were printed and distributed to the armed services. (A second classified volume was being drafted and was planned for distribution in 1949.) (Ref. 118)

(2) Search for qualified officers in postgraduate education. Exploration of the postgraduate educational programs of the armed services disclosed one officer engaged in postgraduate education who was qualified for inclusion in the training program. Arrangements were made with the AEC to assign this officer to a year's duty in on-the-job training with the Health Physics Group at the atomic energy installation at Hanford, Washington.

(3) Operation SANDSTONE. The AFSWP recommended a total of 80 trained officers, who were requested by the Commander of Joint Task Force 7 for duty in this Operation. These officers were graduates of the radiological defense schools, and they participated as a part of Joint Task Group 7.6, the radiological safety organization of the Joint Task Force. Eleven of these officers, who comprised the staff and technical officers of Task Group 7.6, were members of the Radiological Defense Division of the AFSWP.

(4) Operation FITZWILLIAM. Upon request of the Air Force, the AFSWP recommended 40 officers, who also was graduates of the radio-

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logical defense schools, for participation as monitors in this Operation.

(5) Films. A training film or a series of training films on "Radiological Defense" was planned by the Radiological Defense Division from its inception. Such a series was proposed in the final report of the JRSTC. Outlines were drafted and inquiries were made of the possibilities of production by service units or private motion picture companies. In September 1948, an officer of the Division cooperated with the 4201 Motion Picture Special Detachment, stationed in Hollywood, California, at the request of the Commanding Officer of that Detachment, in reviewing the film footage of Operation SANDSTONE; those parts which pertained to radiological defense were earmarked for eventual use in the proposed film or films. The project was still under consideration when the current period of the History ended.

4-5-3. Defense Material.

The activities of the Radiological Defense Division in connection with defense material (through the Defense Material Branch of the Division) consisted for the most part of active participation in the deliberations, and in the formulation of policies, etc., of various committees. These committees were concerned with: the development, production, procurement and allocation of radiological instruments, protective clothing and other protective devices; and with decontamination.

a. Operation SANDSTONE.

A committee was formed on 18 September 1947 to determine the types of radiological instruments which might be procured for field exercises. This committee consisted of: Cdr. H. L. Andrews, U. S. Public Health Service; LCdr. D. C. Campbell, AFSWP; and Dr. R. E. Lapp, Joint Research and Development Board. It presented a report dated 22 September 1947, and procurement of instruments, protective clothing and other material for Operation Sandstone was started 10 October 1947. (Ref. 119)

After Completion of Operation Sandstone, representatives of the Radiological Defense Division (LCdr. D. C. Campbell of the Defense Material Branch and Capt. W. F. Bolen, USAF, of the Training Branch) edited and compiled in final form fourteen JTG-7.6 technical reports, completed 1 September 1948. (Ref. 120)

b. Radiological Instrumentation Committee.

The first step toward the institution of the Radiological

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Instrumentation Committee was a suggestion by Chairman Lilienthal of the AEC, to General Brereton, Chairman of the Military Liaison Committee, by letter dated 9 May 1947, that a joint committee or board, representing the interests of the Commission, the armed forces and civilians, be established to allocate production, and to cooperate in developing new production sources, of instrumentation; he also suggested that this board could work toward standardization of design of different types of radiation detection instruments. ~~(DMB File 334.202.)~~ (Ref. 121)

The AFSWP undertook to set up a committee to coordinate service procurement with procurement by the AEC, and, on 7 August 1947, requested the following to appoint officers to serve:

Chief of Naval Operations

Commanding General, AAF

Joint Research and Development Board

Chairman, Army-Navy Munitions Board

Military Liaison Committee.

The title of this committee was: Joint Radiological Safety Instrument Procurement Committee; it held four meetings, on 29 October and 4, 18, and 20 November 1947. (Ref. 121) ~~(DMB File RSD 334 (Inst. Proc.); DMB File 334.202.)~~

Meanwhile, the Joint Research and Development Board had requested the AFSWP, on 17 October 1947, to form a small panel for the purpose, in general, of: surveying progress in this field of instrumentation; making recommendations on the military characteristics of radiological instruments necessary for atomic warfare; and recommending which agencies should have joint sponsorship of research and development in this field. The JRDB also stated that the panel should

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include representatives of the Signal Corps, the Army Air Forces, the Bureau of Ships, the Bureau of Aeronautics, the Atomic Energy Commission and the Public Health Service. (Ref. 121)

A new committee, the Radiological Instrumentation Committee, was accordingly formed by the AFSWP, with representatives from all the organizations requested, and others as well, and this committee held eight meetings between 23 December 1947 and 18 August 1948. (Ref.122)

c. Radiological Protection Committee.

The Joint Research and Development Board requested the AFSWP to assume primary responsibility for coordination of research and development of radiological protective devices, and to undertake a survey of the decontamination work being done by various Government agencies (by letter and memo, both dated 14 October 1947; Ref. 123).

Accordingly the AFSWP formed the Radiological Protection Committee to handle the former of these two duties, and formed the Radiological Decontamination Committee to handle the latter.

The Air Force, the Navy, the General Staff, USA, the AEC and the U. S. Public Health Service were requested to appoint officers to serve on each of these two committees, and both groups met together on 7 January 1948, combined as the Radiological Protection Committee. Two subcommittees were appointed: the Individual Protective Devices Subcommittee and the Decontamination Subcommittee. (Ref. 124)

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The Individual Protective Devices Subcommittee held four meetings between 13 January and 23 March 1948. (Ref. 124)

The Radiological Decontamination Subcommittee held three meetings between 13 January and 2 March 1948. (Ref. 124)

On the recommendations of the two subcommittees, projects were initiated by the Chemical Corps to investigate all biological and chemical protective devices and decontamination equipment, to determine, respectively, the percentage of protection afforded by the protective devices and the usefulness of the equipment in removing radioactive contamination.

Further meetings of the Radiological Protection Committee as a whole were held on 22 July and 4 August 1948. (Ref. 124) (See also report of subpanel of the Decontam. Subcommittee, "National Radiological Defense Laboratory - Recommendations for Maximum Usefulness to the Armed Services", 24 Aug. 48, to Chief, AFSWP, re: facilities available at the Naval Radiation Lab. for use as an NME Decontam. Research Center; Ref.125; and "Radiological Protection Committee Report on Individual Protective Devices." to Chief, AFSWP; Ref. 126.)

d. Instrument Advisory Group.

The Radiological Instrument Advisory Group, described in paragraph 4-2-2, met first on 15 November 1948 and were advised of the instrumentation programs of the various services. They held a second meeting 20-21 December 1948. (Ref. 127)

In accordance with the recommendations of the Instrument Advisory Group, and with the approval of Dr. W. A. Noyes, Jr., adviser to the Chief, AFSWP (See par. 4-2-2a and 4-5-6j), $50,000 was transferred to the Chemical Corps for chemical detecting investigations, and $95,000 was transferred to the Bureau of Ships for continuation of an instrumentation contract with the General Electric Company. (Ref. 128)

e. Other Activities.

Other activities of the Radiological Defense Division, in connection with defense material have been concerned with:

(1) Military specifications for interim portable survey instruments.

(2) Signal Corps specifications for Radiac Training Sets. (The word "Radiac" is coined from "Radiation Detection, Indication and Computation".)

(3) A Joint AIEE-IRE (American Institute of Electrical Engineers - Institute of Radio Engineers) conference on radiological detection instruments in New York City, 30 November - 1 December 1948.

(4) An investigation into automatic film badge developing machinery, at request of the Surgeon General.

(5) Procurement of instruments. The AFSWP requested the Signal Corps to procure the following:

Geiger Counter, Type AN/PDR-T2() Spec. 71-2510: amount, 100;

Ion Chamber, Type AN/PDR-T1() Spec. 71-2509: amount, 200.

(See also Memo "Exhibit", dated 16 Dec. 48, Ref. 129)

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4-5-4. Medical.

a. Responsibilities.

The responsibilities of the Radiological Defense Division, with respect to medical matters, included:

(1) Serving as medical radiological technical advisers to all Divisions of the AFSWP and to the National Military Establishment.

(2) Furnishing administrative support to AFSWP medical facilities at field installations.

(3) Coordinating joint training, research and development, medical radiological defense policies and operational requirements for the National Military Establishment.

(4) Conducting training schools and courses on the medical aspects of atomic energy.

(5) Participating, as AFSWP medical representatives, on joint boards and panels concerned with the military aspects of atomic energy.

b. Research and Development.

(1) Human Nuclear Tolerances.

The Division, through its Medical Branch, participated in one specific research project, designated by the ~~Radiological Defense~~ Research and Development Board, entitled, "Human Nuclear Tolerances", dated 12 October 1947. The problem of nuclear tolerances has been difficult to solve because of the lack of means of actually determining the effects of varying amounts of radiation on human subjects. All laboratory work was done on experimental animals, and it was difficult to interpret the effects on humans.

The Medical Branch attempted to solve this problem through the cooperation of the Special Projects Division, Surgeon General's Office, U. S. Army, by obtaining a consensus of nationally known radiologists. An informal report, "Report on Radiation Tolerances", dated 30 January 1948, (Ref. 130), was presented to General Groves and to the ~~Radiological Defense~~ Research and Development Board about 5 February 1948. A formal request for the desired information was presented to the Radiological Society of North America on 5 December 1948, and their report had not been received at the end of the year.

(2) Participation.

The Chief of the Medical Branch of the Radiological Defense Division was a deputy member of the Research Council on Atomic Medicine, of the Bureau of Medicine and Surgery of the U. S. Navy. ~~It~~ He was also invited to participate as a member of a new panel, on Medical Aspects of Atomic Energy, of the ~~Radiological Defense~~ Research and Development Board.

The Medical Branch participated in the meetings of the Radiological Protection Committee, and in the Decontamination Subcommittee and the Individual Protective Devices Subcommittee thereof (See par. 4-5-3). Also, the Medical Branch coordinated discussions with the Research and Development Division of the Surgeon General's Office concerning the desirability and possibility of developing an automatic film developing unit that would be practicable for use with the field forces of the Army. This project had not yet been completed as of 31 December 1948, and was awaiting definite information on the responsibilities of the SGO in regard to personal photo-dosimetry.

c. Special Projects.

(1) AEC-MME Medical Panel. The Medical Branch of the Radio-

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logical Defense Division was represented on the Medical Panel of the Atomic Energy Commission and the National Military Establishment, recommended by the Noyes Board to consider the medical problems related to radiological warfare. (The Noyes Board was the Scientific Advisory Committee headed by Dr. W. A. Noyes, Jr., described in par. 4-2-2a.) A meeting was held in Chicago, to consider their mission and responsibilities, and a report was to be rendered at the next meeting of the Noyes Board, after 31 December 1948. Suggested experimental work on the evaluation of the dose rate was already in progress at the University of Chicago. The AFSWP representative was responsible to the Panel for presenting recent developments on radiological warfare which were obtainable in the AFSWP.

(2) Station Hospital, Sandia Base. Until approximately 7 October 1947, the Medical Branch gave administrative and operational support to the Station Hospital at Sandia Base. This involved principally the problem of procurement of adequate professional help for the hospital, by liaison with the Surgeon General's Office. On 7 October 1947, the hospital was placed under the control of the Fourth Army, as it was felt that the facilities of the Fourth Army would be more adequate and that better professional care would be available. During the year 1948, the Commanding General of Sandia Base was confronted with difficulties in the procurement of adequate numbers of personnel; therefore, and because of the number of dependents and the joint nature of the base, it was the opinion of the Surgeon General's Office and the AFSWP, at the end of the year, that more adequate medical service could be obtained for Sandia Base if the hospital were supported by Headquarters, AFSWP, rather than the Fourth Army. Steps were being taken as of 31 December 1948 to obtain the transfer of the hospital back to AFSWP.

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d. Library.

The Medical Branch of the Radiological Defense Division maintained a library of medical and allied subject text books and journals, and publications on medical and physical sciences for the Division.

e. Security and Intelligence.

In fulfilling its duties as medical advisers to the Divisions of the AFSWP, the Medical Branch advised the Security and Intelligence Division on questions of security related to medical matters and on the advisability of the public release of atomic information, through review of articles and publications presented to that Division for clearance.

f. Operation SANDSTONE.

Members of the Medical Branch participated as assistants to the Radiological Safety Officer of Operation ~~SANDSTONE~~ Sandstone in developing medical and radiological defense operational policies for the tests of that operation. All medical examinations of personnel participating were evaluated and compiled by the Medical Branch. Upon completion of the operation, all medical records and radiological defense records relating to personnel dosimetry were placed in the custody of the Medical Branch.

g. Operation CROSSROADS.

The Medical Branch ~~is~~ was appointed the custodian of the Medical and personnel dosimetry records of that operation.

h. Medical Training.

(1) Indoctrination Course.

In May 1947, a short course, as an interim measure to

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train medical officers in the medical aspects of atomic energy, was established by Colonel James P. Cooney, MC, U.S.A., at that time assigned to the Military Application Division of the Atomic Energy Commission. While this course was open to medical officers of the armed services and the U. S. Public Health Service, it was presented for the Surgeon General, U. S. Army.

The first course, of five days duration, was given from 19 to 23 May 1947, at Sternberg Auditorium, Navy Medical Center, Washington, D. C., and was attended by 77 medical officers.

The AFSWP picked up the course at this point, and, with the assistance of the National Military Establishment, the U. S. Public Health Service, the Veterans Administration, and the ~~Radiological Defense~~ Research and Development Board, repeated the course six times before the end of the year 1948. Some minor changes were made in the material presented, and more subjects were added from time to time. All the courses were held at Sternberg Auditorium. It remained a joint course as to both lectures and students. There was an average of 118 students per course in the six sessions under the AFSWP.

During December 1947, and January and February 1948, representatives from 48 medical schools throughout the country attended the course. Many of them returned to their schools and introduced courses or presented material of a similar nature in their curricula. As the course continued, requests were received from civilian doctors interested in national, municipal or industrial defense for permission to attend the course. In general, these requests were honored, and favorable

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contacts were established with civilian agencies.

A total of 792 medical officers and civilians attended this indoctrination course between May 1947 and December 1948. In this total there were 471 from the U. S. Army, and the U. S. Air Force; 95 from the U. S. Navy; 91 from the Veterans Administration; 62 from the U. S. Public Health Service; 12 from the Canadian Army, RCAMC, 50 from Medical Schools; 5 from the Atomic Energy Commission; and 6 were miscellaneous.

Attendance figures by session were as follows:

May 1947	77
September 1947	105
November 1947	139
December 1947	109
January 1948	113
February 1948	139
October 1948	110
	792

At the end of the year 1948, the eighth session had been prepared and was to be presented from 24 January through 1 February 1949 - a duration of seven days, with the additional two days planned for the presentation of the medical and laboratory usage of radioisotopes. This particular session was to be given in conjunction with the American College of Physicians.

(2) Advanced Training.

In April 1947, Colonel Raymond E. Duke and Major C. S. Mudgett, of the Surgeon General's Office, U. S. Army, consulted the University of Chicago and the University of Rochester with reference to

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courses of instruction for medical officers. These courses were to be from six months to one year in duration. In June 1947 the AFSWP continued the negotiations and finally established a course at the University of Chicago; the course started on 10 November 1947, with 16 students, of whom ~~four~~ 4 were from the Army, 10 from the Air Force and 2 from the U. S. Public Health Service, at a cost $700 to $900 per student. The course was completed in May 1948, and it was planned to send most of the officers to AEC installations for two months for field training in radiation hazards.

Plans for another course at the University of Chicago, in Radiation Hazards, were cancelled in June 1948 because the National Military Establishment was unable to obtain the 25 students required to maintain the course. Plans for training at the University of Rochester AEC Laboratory were abandoned at the request of the AEC when the AEC Fellowship program was offered.

In September 1948, this Fellowship program was activated, with three AEC Regional Training Centers participating in the training of medical officers of the armed forces, as follows:

Duke University, Durham, North Carolina: 5 Medical Officers, U. S. Navy; 1 Veterinary Corps Officer, U. S. Army.

University of Colorado, Denver, Colorado: 1 U. S. Public Health Service Surgeon.

Reed College, Portland, Oregon: 3 Medical Officers, U. S. Army.

The tuition for these students was paid by the AFSWP.

(3) Short Term Courses at Civilian Institutions.

From 30 June to 18 July 1947, one medical officer attended a three weeks course at the University of California, on: "Radiactivity as Applied to Medicine". The tuition was paid from AFSWP funds. In addition, the Surgeon General, U. S. A., sent five medical officers to this course.

The AFSWP also paid tuition for nine medical officers taking a three weeks course, from 2 to 20 August 1948, at the University of California, Los Angeles, California, on: "The Application of Nuclear Physics to the Biological and Medical Sciences". One of these officers was assigned to the AFSWP.

(4) Medical Training at AEC Installations.

The AEC has provided on-the-job training, for periods of one to two years, at Los Alamos and Hanford, for five medical officers of the Army, assigned to the AFSWP.

(5) Joint Radiological Safety Training Committee.

The Medical Branch of the Radiological Defense Division was represented in the membership of the JRSTC continuously from its inception on 14 July 1947 until after 31 December 1948. (See par. 4-5-2a), The Branch was also represented in the membership of the Medical Subcommittee of the JRSTC from 28 August 1947 until its dissolution on 8 December 1947, and (by a non-voting member) on the Schools Subcommittee.

(6) Exhibits.

The Medical Branch assisted the National Military Establishment in the preparation of two exhibits of the medical aspects of ionizing radiation:

(a) At the Convention of the American Medical Association, at Chicago, 3-7 June 1948. The exhibit was prepared by the Medical Service, U. S. Air Force; it was later placed in the Museum of Science and Industry, Chicago, for a period of six months.

(b) At the Atomic Energy Exhibit of the Golden Anniversary of the City of New York, 23 August to 19 September 1948. This exhibit was prepared by the Medical Department, U. S. Army, the Bureau of Medicine and Surgery, U. S. Navy, and the Medical Service, U. S. Air Force. It was later sent on a tour of cities in the United States. A representative of the Medical Branch (Major Charles W. DeBaun) served as a member of the Medical and Biological Subcommittee of the Mayor's Advisory Committee on Atomic Energy, of the Mayor's Committee for the Commemoration of the Golden Anniversary of the City of New York.

(7) Other Training and Educational Activities.

Additional activities of the Radiological Defense Division in the medical field, through its Medical Branch, included: furnishing speakers, lecture notes, and visual aid material, for reserve officer groups and civilian medical societies throughout the country; serving as adviser on biological instructional material for non-medical courses on Radiological Defense, at the service schools of the National Military Establishment; offering comments and technical assistance on biological and medical courses established by various services of the National Military Establishment; and furnishing advice to individuals, both military and civilian, on training in the medical aspects of atomic energy.

i. Conferences.

Representatives of the Medical Branch of the Radio-

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logical Defense Division attended the following conferences:

(1) Brookhaven Medical Conference, Brookhaven National Laboratory, 16-18 October 1947.

(2) Atomic Energy Information Conference, Chicago, 18 October 1948.

(3) Conference on Electronic Instruments, American Institute of Radio Engineers, New York, 30 November 1948.

j. Medical Research and AEC Laboratories.

The Medical Branch of the Radiological Defense Division assisted the biological laboratories of the AEC in obtaining qualified research personnel who were members of the armed forces. Personnel were secured through the Surgeon General's Office and were assigned to the laboratories for work, as follows: at Los Alamos, six; at Oak Ridge, two; and at Miamisburg, Ohio, one.

k. Attendance at Schools.

Personnel of the Medical Branch attended the following school sessions:

Colonel James P. Cooney: University of California, "Medical Effects of Radiation", 3 weeks, 30 June to 18 July 1948.

Lt. Colonel Karl H. Houghton: University of California at Los Angeles, "The Application of Nuclear Energy to Biology and Medicine.", 3 weeks, 2 August to 20 August 1948.

Both the above-named officers also attended the Staff Officers Orientation Course at Sandia Base.

l. Motion Picture Projects.

The Medical Branch furnished technical advice and

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comments to the Air Force on a 12-minute color motion picture of the casualties in Hiroshima and Nagasaki, and to the Surgeon General's Office on a 3-reel motion picture outlining the medical effects of atomic explosion, the responsibilities of the medical profession, and the medical measures to be taken in defense against atomic attack.

The Branch also coordinated a motion picture project between the Surgeon General's Office and the Oak Ridge National Laboratories to produce a series of films on the production and use of radio-isotopes as they pertain to medicine.

m. Foreign Visitors.

The Medical Branch furnished unclassified medical indoctrination material to Canadian, British and French medical officers stationed in and visiting Washington on official business. This work was coordinated through the Foreign Liaison Branch, Intelligence Division, General Staff, U. S. Army.

n. Advice to Divisions of AFSWP.

In addition to the advice furnished by the Medical Branch to the Security and Intelligence Division, described in par. 4-5-4e above, the Branch also served the various other Divisions of the AFSWP by giving comments on technical accuracy and medical significance in connection with publications or papers submitted by them.

o. Radiological Defense Manual, Vol. II.

Responsibility for preparing a medical chapter for the second volume of the Radiological Defense Manual, outlining the medical effects of atomic explosions and personnel hazards presented by radioactivity, was delegated to the Medical Branch. At the end of the

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year 1948, this project was underway, and Major James Brennan, on duty with the Health Division, Los Alamos Laboratories, was preparing the initial material, to be submitted to interested medical agencies for checking prior to publication.

p. Liaison With Other Agencies.

(1) Atomic Energy Commission.

Intimate contact on the working level was maintained with the activities of the Atomic Energy Commission, through the Military Application Division and the Division of Biology and Medicine, of the AEC. Mutual services were rendered daily.

(2) National Military Establishment.

Liaison with the medical activities of the various services of the National Military Establishment was conducted as follows:

Of the Army, through the Special Projects Division, Surgeon General's Office;

Of the Navy, through the Atomic Energy Division, Bureau of Medicine and Surgery, and the Medical Section of Op-36, CNO;

Of the Air Force, through the Research and Development Division, Air Surgeon's Office.

(3) Other Government Agencies.

Liaison with other Government agencies interested in atomic energy was conducted as follows:

With the U. S. Public Health Service, through the Chief of the Radiological Health Branch of that Service;

With the Veterans Administration, through the Chief of the Radio-Isotope Section and Special Assistant in Atomic Medicine,

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of that Administration.

(4) Non-Medical Activities.

Liaison with non-medical activities of the National Military Establishment and of other Government agencies was conducted through other Branches of the Radiological Defense Division and through other Divisions of the AFSWP.

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4-5-5. Operational Development.

a. General.

The responsibilities of the Radiological Defense Division with respect to operational development, as provided in the program of the Division dated 12 June 1947, included:

(1) Planning and developing organizations, operations and procedures for the armed forces in conducting defense in radioactive areas.

(2) Establishment of a Defense Unit (or a "Defense Battalion" as it was originally called), to be a field agency, to cope with atomic disaster, and to conduct: field testing of planned techniques of organizational operations and procedures; and field testing of materiel and of methods of detection, inspection and decontamination.

For carrying out these two missions, the Operational Development Branch (originally called "Section") was organized by the Radiological Defense Division.

During the current period of this History, prior to 31 December 1948, the efforts of the Division, through its Operational Development Branch, were concentrated principally on the second mission described above, namely, the establishment of a Defense Unit. It was felt that the accomplishment of this mission, through the planning and developing of the proposed unit and the designation of its duties, its assignments and its methods of operation, would involve automatically a long step forward toward the accomplishment also of an important part of the first mission of the Branch, namely, planning and developing organizations, operations and procedures for the armed forces in general.

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As an additional step toward the accomplishment of the first mission of the Branch, a project was set up, on 10 October 1947, for study and analysis of the operational problems in radiological defense devised for the student officers at the Chemical Corps school at the Army Chemical Center, Edgewood, Maryland, and at the school at the U. S. Naval Damage Control Center, Treasure Island, California. These problems represented the thought of representatives of the services who were trained in radiological defense, and it was believed that study and analysis of them would assist materially in the drafting of recommendations for radiological defense organizations for the armed forces.

The Defense Unit, as proposed by the Radiological Defense Division and planned by the Operational Development Branch, had not yet been approved at the end of the year 1948. Regardless of whether or not this unit is ever established by, or under, the AFSWP, however, it is believed that a brief account of the planning for its establishment and of the purposes it was proposed to fulfill, etc., should be recorded in this History. These plans may have an important influence on future organizational development for radiological defense, no matter what the ultimate form of that development may be; in any case these plans properly form a part of the history of the Radiological Defense Division.

b. Proposed Defense Unit.

The Operational Development Branch was directed, on 9 October 1947, to proceed with the development of the organization required for the proposed Defense Unit. At first (15 October 1947), it was planned to activate Company "C" of the 38th Engineer Battalion (Special) at Sandia Base, and to use that company as a Defense Unit. It was found

that this would not be feasible, however, because the 38th Engineer Battalion (Special) was to be deactivated. (See par. 4-3-2a.)

It then became necessary to compile a complete Table of Organization and Equipment; and at this time it was proposed that the manpower would be limited to 12 officers and 100 enlisted men.

After consultation with the Commanding General and others at Sandia Base, in November 1947, a new Table of Organization and Equipment for the proposed Unit, now termed Special Weapons Unit, Type "B", was drafted at Headquarters, AFSWP. It was approved by General Groves on 28 January 1948 and immediately forwarded to the Chief of Staff, U. S. Army, with recommendation that the AFSWP be directed to activate the Unit. It was recommended that the following specific missions be assigned to the Unit:

(1) To provide for the radiological safety of the AFSWP operations, as required.

(2) To develop monitoring techniques, upon which could be based standing operating procedures, to be disseminated to the appropriate Army, Navy and Air Force commands for information and guidance.

(3) To develop data which could be used by the AFSWP to assist in the education of the public on radiological safety, particularly in connection with civil defense measures.

The T/O & E and the recommendations were in general approved by the Director of Organization and Training, with the proviso, however, that personnel should be assigned by the three services on a pro rata basis.

The plan of organization was revised again, not only to

provide for joint Army, Navy, and Air Force composition of the personnel, but also to incorporate appropriate lessons learned from Operation SANDSTONE (which had been executed meanwhile), in connection with personnel and equipment requirements. It was also decided to make the T/O & E a Table of Distribution and a Table of Allowance. To the three missions described above, the following were added:

(4) To be prepared to participate as a Unit in atomic tests, particularly those tests requiring a well organized and experienced radiological safety task group or unit.

(5) To conduct tests and studies in connection with the technical phases of radiological warfare, and to be prepared to cope with emergencies arising as a result of radiological warfare sabotage.

It was proposed that the participation of the services would be distributed as follows:

	Officers	Men
Army	14	62
Navy	4 (USN:2, USMC:2)	13 (USN:5 USMC:8)
Air Force	10	44
Total	28	119

The final plan of organization was awaiting the approval of the Chief, AFSWP, at the end of the current period of the History. After approval by him it would still be necessary to coordinate with the Army, the Navy, and the Air Force, both for approval of the organization and in preparation for the activation of the Unit. Again, after completion of that coordination, a period of two or three months would be required

for the formation and training of the Unit. Therefore, it was anticipated that it would in any case be some time before the Unit could be prepared to execute any assigned project problems.

As proposed, Special Weapons Unit, Type "B", would constitute the AFSWP field organization for implementing the coordination, through established agencies, of the radiological safety measures of the armed forces.

c. Other Projects.

Other projects in the field of operational development, with which the Radiological Defense Division was concerned during the current period of this History (through its Operational Development Branch) included the following:

(1) Study and analysis of problems of Radiological Defense Officers Schools, T.I., and Chemical Corps School, initiated 10 October 1947.

(2) Standard Operating Procedure for Radiological Safety Task Group for Atomic Weapons Tests, initiated 9 May 1948.

(3) Manual of the Operational Development Branch of the Radiological Defense Division, AFSWP, initiated 22 September 1948.

(4) Preparation of Chapter 14, Operational Section, of Volume II of the Radiological Defense Manual, initiated 27 September 1948.

(5) Work load analysis, Radiological Safety Personnel, Operation Sandstone, initiated 15 October 1948.

4-5-6. Technical.

a. General.

The Radiological Defense Division established a Technical Branch in September 1947, to provide a technical organization within the Division which would make studies and handle technical problems in the entire field of radiological defense. The Radiological Warfare Branch was, in effect, combined with the Technical Branch at this time. This Branch was to evaluate the various effects of atomic bombs, evaluate research and development programs for equipment to be used for radiological defense, and make studies of the potentialities of radiological warfare. The studies were to include preparation of programs of experimental work to be conducted as a part of weapons field tests.

b. Radiological Warfare.

The AFSWP was directed by the Research and Development Board to study the feasibility of the use of radioactive materials for military purposes, by letter dated 14 October 1947. (Ref. 131) ~~(See JRDB letter 88/4.5, dated 14 Oct. 47.)~~

Efforts were made to organize an advisory group, with the AEC, to study this problem, but they never materialized fully, because of delays in coordinating the program with the AEC. (Ref. 132.) ~~(See letter SWPHS/pr RSD 322.115, 8 Dec. 47; and letter 24 Dec. 47 from AEC.)~~ The next step in this project was a meeting of what was called the AFSWP Radiological Warfare Study Group, held at Los Alamos on 17 February 1948, at which the problem was analyzed and broken down into the following components:

(1) Medical

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(2) Production and Chemistry

(3) Dissemination

(4) Tactical and Strategic Employment

(5) Defense

(See minutes of Joint NME-AEC Panel on RW, dated 18 Feb. 48; Ref. 133.)

Then a Joint Panel on Radiological Warfare was organized by the National Military Establishment and the AEC, and held its first meeting on 23 May 1948, at the AEC offices. At this meeting members of the Technical Branch represented the AFSWP and assisted Colonel John H. Hinds, a member of the Military Liaison Committee and military member of the Panel, in preparing information on military factors. (See minutes of meeting, 23 May 48, Ref. 134.) During the summer of 1948 members of the Technical Branch acted as staff members for the Joint Panel, and assisted in preparing studies of the feasibility of radiological warfare. The military aspects were coordinated, and the assistance of the Chemical Corps, U. S. Army, of the RAND Project, and of the Naval Radiological Defense Laboratory, at San Francisco, California, was obtained to investigate certain specific problems.

The second meeting of the Panel was held at the AEC on 29 August 1948 (Ref. 134). The minutes of this Panel meeting and the accompanying report, or "Staff Study", of the same date (Ref. 135), are important documents, and the recommendations adopted by the Panel, which were incorporated in the minutes, deserve to be quoted here, as follows:

"1. That the Joint Chiefs of Staff be informed that present productive capacity either of fission products or of synthetic radioelements and the present state of methods of dissemination are

such as to make impossible the offensive use of radiological warfare for a period of at least two years and probably longer;

"2. That the Joint Chiefs of Staff be further informed that for the years immediately following the period stated in recommendation 1, the shortage of raw material and productive capacity will limit the use of radiological warfare to carefully selected targets and that its use would probably not be a decisive factor in a major conflict;

"3. That the use of radioactive materials to deny localized areas and important installations during planned evacuation should be made feasible in about two years;

"4. That main attention be directed to the use of gamma emitters for offense;

"5. That studies on a laboratory scale only on other types of emitters be continued and that the question of their use for offense and for sabotage be reopened when and if the data so warrant;

"6. That prime responsibility for the development of dissemination methods be delegated to the National Military Establishment;

"7. That responsibility be placed within the National Military Establishment in such a way and at such a level as to ensure prosecution of a vigorous program and of coordination of its various related parts;

"8. That the program be such as to ensure development if possible of satisfactory dissemination methods within a period of two years;

"9. That the development of protection, detection, and

decontamination measures be carried forward and that adequate steps be taken to ensure assignment of responsibility for the various parts of this program;

"10. That the Atomic Energy Commission assume responsibility for other phases of the program, particularly as related to production, studies of biological effects, etc.

"11. That in the Atomic Energy Commission program of reactor development a high priority be given to research and development leading to the increase in production capacity of materials for radiological warfare;

"12. That the separation of fission products (Zr and Cb) from Redox solutions be investigated with such priority as to ensure completion of the laboratory stages within one year;

"13. That the entire program be reviewed during the fall of 1949 to ascertain whether in the light of the then status of the offensive and defensive programs a recommendation should be made to establish a stockpile of a suitable gamma emitter for immediate use in the event of a national emergency;

"14. That the several phases of radiological warfare be reclassified as set forth in Appendix I; to the end that the National Military Establishment and other interested agencies may adequately pursue programs for civilian and other defense;

"15. That this Panel hold one further meeting on Monday, December 6, 1948, to ascertain what action has been taken on the above recommendations and to make such further recommendations as may appear advisable and with a view to the probable discharge of the Panel at

that time."

(The third meeting of the Panel was not held in December 1948, as recommended above, but was scheduled instead for 10 January 1949. See par. 4-8-4 c.)

The Chief of AFSWP made recommendations with reference to the coordinating authority of the AFSWP in offensive radiological warfare to the Committee on Atomic Energy of the Research and Development Board, National Military Establishment. (See CAE agenda item, dated 23 Sept. 48; Ref. 136; also, par. 4-8-4 a, hereinafter.) These recommendations were approved by the Committee and submitted to the Research and Development Board, who approved them with certain clarifications with respect to delegation of authority by the Board. (Letter 19 Dec. 48, "Radiological Warfare", ~~File RDE 89/7.3,~~ signed Karl T. Compton, Chairman, to the Chairman, CAE; Ref. 137.)

On 1 October 1948, the Chemical Corps submitted to the AFSWP a proposed program on radiological warfare. The Technical Branch reviewed this program and made a number of dated comments 2 November 1948, which were incorporated in what became the final program of the Chemical Corps in this field. (See Program for Project 4-12-01-D1, Selection and Military Use of Radioactive Materials as Toxic Agents, 16 Dec. 48; Ref. 138.) At the request of the Chemical Corps, the AFSWP, on 29 November 1948, transferred $500,000 for work on radiological warfare.

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c. Weapons Tests.

In September 1947, the Technical Branch prepared an outline of the various experiments in the field of nuclear radiation which would be required for the forthcoming bomb tests of Operation Sandstone, at Eniwetok, and forwarded it to Captain James S. Russell, USN, Division of Military Application, AEC. (See letter 9 Sept. 47, ~~File I-36~~, "Nuclear Radiation Measurements for Atomic Bomb Tests"; Ref. 139.)

Details of various tests were worked out in the fall of 1947 and the AFSWP arranged to carry out directly tests on: gamma radiation as a function of distance; neutron absorption; bomb crater analyses with decay curves; radioactivity in the cloud; and thermal radiation as a function of distance.

Funds were transferred from the AFSWP to the National Bureau of Standards, to carry out film calibration and development. (See sub par. d(1) and d(2) below.)

Members of the Technical Branch participated in Operation Sandstone from February to May 1948, and, during June and July 1948, the Branch prepared and reviewed reports relating to 14 projects which had been carried out at the operation under the direction of its members. In October 1948 the Branch prepared recommendations of certain experiments required at future tests, and assisted Lieut. Colonel E. B. Kelly, the staff of the Military Liaison Committee, in preparing an agenda item. (See letter, 19 Nov. 48, "Planning for Next A-Bomb Tests", MLC to: AEC; G. of S., USA; C. of S., USAF; CNO; and Chief, AFSWP; Ref. 140.)

d. Photo-Chemical Research.

In the Fiscal Year 1949, the sum of $100,000 was budgeted

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for photo-chemical research of interest in radiological defense. The following funds were transferred:

(1) $5,000 to the National Bureau of Standards, in February 1948, to calibrate film badges for different energies and to develop and read films from Operation Sandstone. These films furnished data for the reports previously mentioned, in subparagraph c.

(2) $11,500 to the National Bureau of Standards, in August 1948, for additional work on calibration of films and investigation of new films for radiation dosage measurements.

(3) $50,000 to the Chemical Corps, in December 1948, for research on chemical methods of detection. (See letter, [redacted], 30 Dec. 48, Ref. 141.) This action followed a conference, in September 1948, with representatives of the Chemical Corps, to discuss a research program for developing chemical methods of detecting nuclear radiations. (See [redacted] letter, [redacted], 28 Sept. 48, Ref. 142.) The transfer of funds had the approval of the Instrument Advisory Group under Dr. G. Failla (see subparagraph j(4) below).

e. Model Studies of Underwater Explosion Phenomena.

For the Fiscal Year 1949, $180,000, and for the Fiscal Year 1950, $200,000, were budgeted for carrying out model studies of underwater explosions, to determine under what conditions a base surge might be obtained.

Dr. W. G. Penney, the British scientist from Los Alamos who had taken an active part in surveying the bomb damage at Hiroshima and Nagasaki, and had made numbers of calculations of the peak pressures developed by the two combat bombs (See Manhattan District History, Bk. I,

Vol. 4, p. 6.8), reported to Admiral Parsons the results of underwater tests carried out in England. On the basis of this report, an agenda item was prepared for the meeting of 22 October 1948, of the Committee on Atomic Energy, recommending future studies, and a committee was set up to investigate the pertinent information. This Committee did not meet until after 31 December 1948. (See agenda item for meeting of 22 Oct. 48, dated 15 Oct. 48, "'Base Surge' Consideration and Recommendations for Full Scale Atom Bomb Tests"; Ref. 143.)

f. Shielding Studies.

For the Fiscal Year 1949, $50,000, and, for the Fiscal Year 1950, $100,000, were budgeted for studies and experiments on problems of shielding from atomic bombs.

Shielding experiments for Operation Sandstone were planned by the Technical Branch, in conjunction with the Bureau of Ships, U. S. Navy, the Corps of Engineers, U. S. Army, and the Bureau of Yards and Docks, U. S. Navy. A report, dated 1 July 1948, was submitted to the Director of Operation Sandstone, (Ref. 144).

A shielding symposium was held at Oak Ridge, 27 to 30 September 1948, and a paper was prepared by the Technical Branch and presented at the meeting, outlining the problems of shielding from atomic bombs, (Ref. 145). These problems were discussed also with personnel of RAND Project, who agreed to investigate certain phases.

g. Water Supply Purification.

For the Fiscal Year 1949, $180,000, and, for the Fiscal Year 1950, $600,000, were budgeted for research and development of water purification. The Naval Radiological Defense Laboratory was requested to make a survey of the problem and to forward pertinent information;

and the Corps of Engineers was consulted with respect to the possible initiation of a project to study water purification methods. (Just after the close of the current history period, on 4 January 1949, a conference was held at the AFSWP with AEC personnel, to coordinate military activities on this subject with those of the AEC.)

h. Study of Thermal Radiation Effects.

Activities in which the Technical Branch took part, in connection with the subject of thermal radiation effects, included: the execution and direction of measurements of thermal radiation at Operation Sandstone; discussion with Dr. Herman E. Pearse, of the University of Rochester, of this program on medical aspects of flash radiation; and a conference, on 18 November 1948, at the AFSWP, on the thermal radiation from atomic weapons. At the conference mentioned above, which was attended by representatives of the AFSWP, of various interested service organizations, and of the AEC, the problem was broken down into its component parts and recommendations for extending the work were made.

i. Meteorological Studies.

For the Fiscal Year 1949, $200,000, and, for the Fiscal Year 1950, $200,000, were budgeted for meteorological studies. It was anticipated that these funds might be used for studying the dynamics of an underwater explosion and the long range travel of radioactive clouds, but action was postponed until after the end of the current period of this History.

j. Scientific Advisers to the Chief, AFSWP.

In October 1947, it was recommended by the Technical Branch that the assistance of scientific advisers be obtained, to provide technical guidance to the project. Provision was made for funds for

this purpose in the budgets for both the Fiscal Years 1949 and 1950.

About 1 October 1948, Dr. W. A. Noyes, Jr., Chairman of the Chemistry Department of the University of Rochester, and war-time division chairman of the National Defense Research Committee, agreed to serve as adviser to General Nichols in all matters pertaining to the field of radiological warfare. (See par. 4-2-2 a.) It was arranged that all actions in this field would be referred to him prior to transmittal to the CAE or the individual services by the Chief, AFSWP.

Actions by Dr. Noyes during October, November and December 1948 included:

(1) Recommendations that the task of developing means of disseminating radioactive materials be assigned to the Army and that the AFSWP act as coordinating authority in the field of offensive radiological warfare.

(2) Decision to split the field of decontamination into two phases: the research phase, to be carried out at the Naval Radiological Defense Laboratory if facilities were available; and the final development phase, to be carried out by the Chemical Corps on items involving two or more services.

(3) Review of the protection programs of the Army and the Navy, and informal recommendations as to their technical desirability.

(4) Review of the instrumentation program, and recommendation that $500,000 be transferred to the Signal Corps (transfer of $300,000 was approved by the CAE). About 1 November 1948, the Instrument Advisory Group was formed by Dr. Noyes, to study the radiological instrumentation programs, prepare an overall service program, and make

recommendations on assignment of funds. (See par. 4-2-2 a.)

The group held two meetings in 1948. ~~(See Instrument Advisory Group~~ ~~Folder~~; (Ref. 146; see also par. 4-5-3 d.)

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4-5-7. Crossroads.

On 22 December 1948, the Crossroads Division of the AFSWP was deactivated, and its functions, personnel, etc., were transferred to the Radiological Defense Division, in accordance with Administrative Memorandum No. 35, of that date (Ref. 147). Inasmuch as the Crossroads Division operated independently throughout substantially the whole of the initial period of the AFSWP History, its history is presented separately, in Section 7 hereinafter.

4-5-8. Organization and Personnel.

The original charter of the AFSWP stipulated for the Radiological Defense (then Safety) Division that it would "require a Chief, and Assistants representing the Army and Navy and Air Forces", and that it would "also require trained experts from appropriate Technical Services and Bureaus of the War and Navy Departments".

a. Chief and Deputy Chief. The Chief of the Radiological Defense Division, from its inception throughout the current period of this History, was Captain Frank I. Winant, Jr., U. S. Navy. From 16 June 1947, Colonel Robert N. Isbell, USAF, served as Deputy Chief of the Division.

b. Organization.

The Radiological Defense Division required more personnel than any other division of the AFSWP with the exception of the Administration and Personnel Division. The activities of this Division have been unusually varied and to some extent independent of the other divisions of the AFSWP. For these reasons, efficiency of operation dictated that the Division be organized as a number of separate branches. Most of these branches were initiated and their duties were defined, by the

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Chief of the Division in his letter to the Chief of AFSWP, dated 12 June 1947 (see par. 4-5-1). The branches, which were five in number as of 31 December 1948, correspond to the subject headings of the main paragraphs Nos. 2, 3, 4, 5 and 6 of this section of the History. Their names and key personnel were as follows:

(1) Training Branch. This Branch was initiated 12 June 1947, and was activated 24 September 1947. LCdr. Charles H. Carr, U. S. Navy, served as Chief of the Branch from 24 September 1947 to 1 November 1948, when he was relieved by Comdr. T. R. Fonick, who served as Chief until the end of the current period of the History. Captain William F. Bolen, USAF, served as Deputy Chief of the Training Branch from 2 June 1948.

(2) Defense Material Branch. This Branch was initiated on 12 June 1947 and activated on 12 September 1947. LCdr. D. C. Campbell, U. S. Navy, served as Chief of the Branch from 12 September 1947 until the end of the current period of the History, except for a period of about 9 months in 1948 while he was away at Operation Sandstone. During that period Lt. Colonel William S. Cowart, Jr., USAF, served as Chief of the Branch.

(3) Medical Branch. This Branch was initiated on 12 June 1947 and officially activated on 29 June 1947, although some of its personnel were assigned to the Branch as early as 2 May 1947, and the Branch may be said to have been in existence from that date. Lt. Col. Karl H. Houghton, MC, U. S. Army, served as Chief of the Branch from 2 May to 17 June 1947; then, after a brief intermission during which he served as Staff Medical Officer, from 17 June to 1 September 1947, he again served as Chief throughout the remainder of the current

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period of this History. Colonel James P. Cooney, MC, U. S. Army, was assigned to the AFSWP from 13 June 1947 to 1 September 1947, and from 17 June to 1 September he served as Chief of the Branch (See AFSWP SO #29, 17 July 47). On 1 September he was relieved from permanent duty with the AFSWP, but was given temporary additional duty as Medical Adviser to the Chief, AFSWP, which continued to the end of the current period of the History. During the period 1 September 1947 to 31 December 1948, Colonel Cooney held assignments to the Surgeon General's Office, Special Projects Division, to Joint Task Force No. 7, and to the Military Applications Division, AEC. Major Charles W. DeBaun, MC, U. S. Air Force, was assigned to the AFSWP on 5 January 1948, and served as a representative of the Air Surgeon and as Deputy Chief of the Medical Branch during the remainder of the current period of the History. Dr. George M. Lyons, Chief of the Radio-Isotope Branch and Special Assistant on Atomic Medicine of the Veterans Administration, served as medical consultant to the Medical Branch from 3 November 1947.

(4) Operational Development Branch. This Branch was initiated on 12 June 1947, and activated on 7 October 1947. Lt. Col. (then Major) R. I. Moss, U.S.M.C., became Chief of the Branch (then section) on 7 October 1947, and served until the end of the current history period. (As of 31 December 1948, the authorized strength of the Branch was 2 officers and 1 secretary.)

(5) Technical Branch. This Branch was initiated on 12 June 1947, and activated in September 1947. (At that time the Radiological Warfare Branch was, in effect, combined with it, to form essentially one branch, as previously noted.) Dr. Herbert Scoville, Jr. served as Technical Director of this Branch throughout this period of its history.

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Dr. Scoville had previously served with Colonel S. L. Warren in the 013 Radioactivity Group at Operation Crossroads (See Manhattan District History, Bk. VIII, Vol. 3, Chap. 8), and, before that, had served on the National Defense Research Committee project at the University of Rochester, Northwestern University, and the University of Illinois. Other key personnel of the Technical Branch included Lt. Col. James B. Chubbuck, C.E., USA, from 12 August 1947; Lt. Col. Allan S. Hirsch, FA, USA, from 28 September 1948; and Major William W. Stone, Cml. C., USA, from September 1947 until 1 December 1948.

(6) Crossroads. When the Crossroads Division was abolished, as such, and transferred to the Radiological Defense Division, on 22 December 1948, its personnel, numbering 15 at that time, became part of the personnel of this Division. The organization and personnel of the Crossroads Division are described in Section 7 hereinafter.

c. Total Personnel.

The total personnel of the Radiological Defense Division, as of 31 December 1948, were composed of the following (including the Crossroads personnel):

13 Officers (5 USA; 4 USN; 1 USMC; 3 USAF)

9 Enlisted (USN)

11 Civilians

33 Total

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16 July 1948

MEMORANDUM FOR LT. COL. J. B. LAWRENCE

Subject: Annual Report of the Radiological Defense Division

The annual report of the Radiological Defense Division is forwarded herewith. This report is submitted in six parts covering the activities of the various Sections of this Division and the participation of the Division as the nucleus of the Joint Radiological Safety Group in Operation "Sandstone".

FRANK I. WINANT, JR.
Commander, U.S.N.

Inclosure:
Report, Parts
A. Training
B. Operational Development
C. Defense Materiel
D. (Technical) RW
E. Medical
F. Operation "Sandstone"

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NATIONAL MILITARY ESTABLISHMENT
ARMED FORCES SPECIAL WEAPONS PROJECT
P. O. BOX 2610
WASHINGTON, D. C.

ADDRESS REPLY TO:
THE CHIEF, ARMED FORCES
SPECIAL WEAPONS PROJECT

ANNUAL REPORT OF THE TRAINING SECTION OF RADIOLOGICAL DEFENSE DIVISION, AFSWP

1. Joint Chiefs of Staff Memorandum SM-7864, dated 25 March 1947, directed the Chief, Armed Forces Special Weapons Project to organize the Joint Radiological Safety Training Committee to carry out recommendations of the Joint Crossroads Committee with respect to the problem of joint radiological defense training. Accordingly, on 14 July 1947, the Chief, Armed Forces Special Weapons Project, in a memorandum to the Chairman, JRSTC, forwarded the precept of this committee, stating its organization, objective, membership, and procedure. With a membership selected from the Joint Armed Services, plus the U. S. Public Health Service, the Veteran's Administration, and the Atomic Energy Commission, this committee was convened for its first meeting on 15 July 1947. In this and subsequent committee meetings, work requirements of the JRSTC were divided and precepts were issued for the following subcommittees: National Organization, Armed Forces, Schools, Medical, Terminology, and Steering. These subcommittees were directed to explore problems of Radiological Defense training and related matters as indicated by the subcommittee titles, reporting their results as recommendations to the JRSTC. The JRSTC, by its precept, was directed to report overall recommendations of the subject of joint radiological safety training to the Joint Chiefs of Staff, through the Chief, Armed Forces Special Weapons Project. During fiscal year 1948 all of the subcommittees have submitted approved reports to the JRSTC. As of 12 August the subcommittee reports have been placed before the Steering Subcommittee of the JRSTC which will coordinate the conclusions therein and draft a final report of the JRSTC.

2. Submitted herewith are itemized highlights of the reports of each of the above-mentioned subcommittees as submitted to JRSTC:

a. National Organization Subcommittee:

This subcommittee concluded that radiological defense training of the national public should be a responsibility of a civil defense organization when established. It was further recommended that the Armed Forces have a fundamental interest in civil defense and must be prepared to advise, assist, and augment radiological defense and training therefor, which may in the future be administered by such a civil defense agency.

To a high degree the plans formulated in this subcommittee constitute a study along the anticipated lines of a civil defense organization and are thereby serving as an aid to the Office of Civil Defense Planning.

It was also reported that the Armed Forces must be prepared to assume responsibility for adequate civil defense until such time as a civil defense agency is in being, without divergence of the Armed Forces from accomplishment of their primary mission.

This subcommittee further concluded that the armed forces should activate a self-contained pilot Radiological Defense military unit for operational training and development and "war-gaming" tests of radiological defense techniques. This unit (Special Weapons Unit, Type "P") would be available for use in a radiological catastrophe or future tests of atomic weapons.

b. Armed Forces Subcommittee Report:

The Armed Forces Subcommittee established organization, position, and billets within the individual armed services for which radiological defense training will be required, including totals of personnel to be trained. Since the submission and approval of the Armed Forces Subcommittee report, it has become apparent to the JRSTC that the basic facts as set forth in that report continue as reliable, but that the stated totals must necessarily be subject to considerable adjustments.

This subcommittee subscribed to the principle that the radiological defense organization of the armed services should be included within the framework of presently existing organizations concerned with defense and damage control. This was elaborated upon in the case of the Army with an interpretation that the Chemical Corps be designated as the agency charged with the development of the Army plan for Radiological Defense and that this plan be superimposed upon the chemical defense system now in effect.

c. Medical Subcommittee:

This subcommittee recommended that training in the medical aspects of radiological defense be conducted on a close parallel with military line training and that the policy of organization for radiological defense be fostered along the lines of a line-medical team arrangement.

d. Terminology Subcommittee:

This subcommittee concluded that, with the exception of certain terms of interest to the military only, glossaries of definitions on the subject of nucleonics, nuclear physics, radiological defense, and allied sciences be obtained from scientific organizations presently embarked on the composition of such glassaries - for example, the American Society of Mechanical Engineers, the American Medical Association, the American Institute of Electrical Engineers, etc. Since submission and approval of the Terminology report to the JRSTC, the National Research Council has organized a conference of those organizations engaged in the composition of a glossary and has invited the Armed Forces Special Weapons Project to attend and participate in the overall coordinated program.

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e. Schools (and Interim Schools) Subcommittee:

This subcommittee has assisted in establishment and development of certain interim training schools and programs (which will be elaborated further below) and has formulated a report to the JRSTC, which establishes three distinct levels of training. These are the Advanced Education, involving Postgraduate College work; Technical Training, involving attendance of the Armed Forces personnel at special joint technical schools for short courses; Indoctrination, involving dissemination of basic radiological defense data to all personnel in the Armed Forces.

f. Steering Subcommittee:

No formal report is required from this subcommittee. During fiscal year 1948, it has supervised procedures in the JRSTC and will presently embark on a study of overall subcommittee reports with a view to drafting the final JRSTC report for discussion and approval by the JRSTC full membership.

3. During the period 1 July 1947 to 30 June 1948, the Armed Forces Special Weapons Project has initiated and coordinated several interim radiological defense training measures. These interim schools and training programs were organized on recommendations of the joint services, the JRSTC and its subcommittees, and the Radiological Defense Division of the AFSWP.

4. The Radiological Defense Engineer Postgraduate Course was organized and a pilot group of students was embarked on this course in the fall of 1947. Academic arrangements and financial agreements for this course were coordinated by the AFSWP between the joint services, the U.S. Naval Postgraduate School, and the University of California. As of 30 June 1947, the pilot group of 14 officers who successfully completed the first academic year have been transferred to the University of California for the second and third postgraduate years. A second postgraduate group from the joint services, numbering 11 Army, 11 Navy, 8 Air Force, 1 Coast Guard, and 2 Public Health Service officers have been ordered to begin the course at the U.S. Naval Postgraduate School. In May 1948, the first group of medical officers to complete a postgraduate education in medical aspects of radiological defense at the University of Chicago, numbering 16 officers (4 Army, 0 Navy, 10 Air Force, and 2 USPHS) were graduated and returned to positions in their basic services. In fiscal year 1949, it is planned to order an indefinite number of medical officers to similar courses, to be conducted at the University of Rochester and other universities. Fifteen medical officers from the joint services will be embarked on the medical training program sponsored by the Atomic Energy Commission in various universities as part of this program.

5. At the technical level, the Radiological Defense Training Course at Treasure Island originally established by the Navy has, through Navy participation in the JRSTC, been incorporated in the overall joint radiological defense training program. This course was the pioneer training effort. Patterned after the Treasure Island course, the establishment of a parallel school administered by the Army was sponsored by the AFSWP

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and the Navy in October 1947, at the Chemical Corps School, Army Chemical Center, Maryland. At this point the Armed Forces Special Weapons Project, in accordance with its charter, took an official interest in these two schools with regard to standardization of curricula. A third school at this level is planned for establishment by the Air Force and administration by that service at Keesler Field, Biloxi, Mississippi, for training of approximately 40 officers from the joint services per seven week period. It is contemplated that the Keesler Field School will be in operation in August 1948. As of 30 June 1948, the following totals of officers have been graduated from the above schools: Army 164, Navy 223, Air Forces 94, Public Health Service 8, Civilians (Government Employed) 31. Planned in the Technical Training level and included in the report of the Schools Subcommittee to the JRSTC, not yet submitted or approved, are recommendations for the following courses: Short practical radiological defense officers' courses, courses for enlisted monitors, courses for instrument technicians, courses for medical laboratory technicians, and a revision of courses for training in medical aspects of radiological defense at the technical training level. It is planned that all courses at this level of training will be conducted in joint service student groups or will be standardized as to curricula by the Armed Forces Special Weapons Project.

6. Programs of indoctrination have been organized and implemented by each of the Armed Services. The Armed Forces Special Weapons Project has participated in and has assisted this program of indoctrination in several ways. The project has organized and sponsored a coordinated lecture series for the indoctrination of senior officers for presentation at the National War College, Industrial College of the Armed Forces, Armed Forces Staff College, Command and General Staff College, Naval War College, and Air University. This course has further been offered to senior officers on duty in the Pentagon in Washington. Actual presentation by selected lecturers from the Armed Forces Special Weapons Project was accomplished during fiscal year 1948 at the Air University, the Naval War College, and the Pentagon. The project continues to offer this presentation to the above-listed institutions. The Armed Forces Special Weapons Project further sponsored the formulation of a coordinated indoctrination lecture series for presentation by trained school faculty members in long term service schools in the armed services. This series was drafted at the joint Radiological Defense School at Edgewood, Maryland. It has been reviewed by the Armed Forces Special Weapons Project and is now in the hands of the Radiological Defense School at Edgewood, and the Chemical Corps for final revision and distribution to the Armed Services. The Project, in conjunction with the instructor staff of the School at Edgewood, the Bureau of Personnel, and the Director of Organization and Training, coordinated the drafting of an extension course in radiological defense to be presented in the three services. This course, which is divided into five subcourses, as of 30 June 1948, is three-fifths complete. In conjunction with this extension course, the services have commenced education of reserve component officers at both the indoctrination and the technical training level by the conduct of frequent two-week courses at the Radiological Defense training schools at Treasure Island and at Edgewood. In joint courses conducted at Walter Reed Hospital and the Naval Medical Center, Bethesda, Maryland, a total of 676 medical officers and civilian doctors has been given an interim indoctrination in medical aspects of radiological defense.

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7. The Armed Forces Special Weapons Project has accomplished several other items in the furtherance of radiological defense training which are not directly related to specific schools or courses, as follows:

a. 35,000 copies of the Joint Crossroads Committee Radiological Defense Manual, Volume I, were printed and distributed to the Armed Services.

b. Postgraduate educational programs of the Armed Services were explored to find officers engaged in postgraduate education who might be qualified as equivalent to radiological defense postgraduate engineers. Only one such officer was found. It was arranged that this officer should be detailed to a one year's duty in on-the-job training with the Health Physics Group at the Atomic Engineering Installation at Hanford, Washington.

c. In conjunction with Joint Task Force 7, on Operation "Sandstone", the Armed Forces Special Weapons Project recommended a total of 80 trained officers which the Commander of Joint Task Force 7 requested from the Armed Services for duty at Operation "Sandstone". These officers were graduates of the radiological defense schools. Valuable practical training was received by these officers by participation as a part of Joint Task Group 7.6, a radiological organization of that joint task force. Of this group of officers, eleven who obtained this experience at Operation "Sandstone" are members of the Radiological Defense Division of the Armed Forces Special Weapons Project. This latter group comprised the staff and technical group of Task Group 7.6 and planners.

d. In accordance with the request by Headquarters, U. S. Air Force, the Armed Forces Special Weapons Project listed and recommended 45 officer monitors for participation in operation "Fitzwilliam".

e. Initial planning is in progress in the Armed Forces Special Weapons Project in the matter of the drafting and production of a complete radiological defense training film which will be presented to the services as a training aid when completed.

8. With respect to indoctrination of the national public, the Armed Forces Special Weapons Project has subscribed to several basic policies, some of which have been previously named above. They are:

a. That Radiological Defense training of the national public is a responsibility of the Office of Civil Defense, when established with coordination by Armed Forces Special Weapons Project.

b. That the Armed Services have a definite responsibility and commitment in assisting civil defense in the zone of the interior.

c. That the Armed Forces Special Weapons Project should assist the Office of Civil Defense Planning with all advice and information available and maintain a close liaison with that office.

d. That in all joint committee activities under the auspices of the Armed Forces Special Weapons Project, due regard should be had for the future adaptation of any program of radiological defense training to civil defense.

e. That radiological defense training of the national public can be most efficiently assisted by the Armed Forces Special Weapons Project and by the Armed Services by organization and vigorous pursuit of an indoctrination program within the services, which may be readily adapted to public training when required.

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ANNUAL REPORT OF THE OPERATIONAL DEVELOPMENT SECTION
RADIOLOGICAL DEFENSE DIVISION, AFSWP

1. In accordance with the provisions of the Chief, Radiological Safety (now Defense) Division letter to the Chief, Armed Forces Special Weapons Project, subject: "Proposed Program for Defense Division" (dated 12 June 1947), the Operational Development Section was established and was directed to carry out the following missions:

a. Planning and development of organizations, operations, and procedures for the Armed Forces in conducting defense in radioactive areas.

b. Establishment of Defense Unit (designed to cope with atomic disasters) - a field agency - part of whose mission is to conduct:

(1) Field testing of planned organizations, operations, and procedure techniques.

(2) Field testing of material and of detection, inspection, and decontamination methods.

2. On 9 October 1947, the Section was given a verbal directive by the Chief of the Division to start work on the development of the organization required by the second part of its mission (Defense Unit).

3. A Summary Sheet, drafted by Capt. Winant (T.S. File, 1-13) for General Groves' signature, recommended to the Chief of Staff, Department of the Army, the activation of Company "C", 36th Engineer Battalion (Special), (Field Operation Unit of AFSWP) stationed at Sandia Base and the use of that Company as a Defense Unit. This idea was considered unfeasible and was abandoned, because the 38th Engineer Battalion (Special) was to be deactivated on paper and renamed.

4. It was now necessary to submit a complete T/O&E to General Groves, Chief, AFSWP, for his approval, and the T/O&E was limited in manpower to 12 officers and 100 enlisted men.

5. A proposed T/O&E was drawn up in the Washington office, and on 3 November 1947, Major Richard I. Moss, Section Chief, and Lt. Comdr. Charles H. Carr of the Training Section were sent to Sandia Base to confer with Brig. Gen. Montague and Staff, 38th Engineer Battalion (Commanding General and members of the AFSWP field organization) regarding the proposed

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defense unit. A general agreement was reached on a rough T/O&E, and the data was brought back to Washington for detailed drafting.

6. The redrafted T/O&E for Special Weapons Unit, Type "B" (the name now assigned to the defense unit), plus a letter of transmittal to the Chief of Staff, U. S. Army (Attention, Director of Organization and Training), were prepared for General Groves' signature (Chief, AFSWP). On 28 January 1948, the T/O&E was approved by General Groves and immediately forwarded to the Chief of Staff, U. S . Army, recommending in the letter of transmittal that the AFSWP be directed to activate the Unit, and that it be assigned the following specific missions:

a. To provide for the radiological safety of the Armed Forces Special Weapons Project operations as required.

b. To develop monitoring techniques, upon which could be based, standing operating procedures to be disseminated to the appropriate Army, Navy, and Air Force commands for information and guidance.

c. To develop data which can be used by the Armed Forces Special Weapons Project to assist in the education of the public on radiological safety, particularly in connection with civil defense measures.

7. On March 31, 1948, the Director of Organization and Training answered the Chief, AFSWP letter, saying that O&T agreed with the missions of the Unit and the general form of the T/O&E, but that personnel should be provided by the three Services on a pro-rate basis.

8. From 18 April 1948 to 19 May 1948, work ceased on "Defense Unit" (Special Weapons Unit, Type "B") due to the assignment of the Operational Development Section to Task Group 7.6, Joint Task Force Seven (Operation "Sandstone").

9. On 10 May 1948, aboard the USS BAIROKO (CVE 115), a conference was held by Comdr. Winant, and it was decided to rewrite the T/O&E for the Special Weapons Unit, Type "B", emphasizing the following points:

a. The missions of the Unit were to remain unchanged.

b. Lessons learned from Operation "Sandstone" were to be incorporated as appropriate in connection with personnel and equipment requirements.

c. The Unit was to be composed of Army, Navy, and Air Force personnel.

10. A further conference (14 July 1948) with Comdr. F. I. Winant, Chief, Radiological Defense Division, AFSWP, resulted in a decision to add two missions to those already assigned to the Unit. The newly assigned missions were:

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a. To be prepared to participate as a Unit in atomic tests; particularly, those tests requiring a well organized and experienced radiological safety task group or unit.

b. To conduct tests and studies in connection with the technical phases of Radiological Warfare and be prepared to cope with emergencies arising as a result of Radioactive Warfare sabotage.

11. Further discussion and evaluation of Special Weapons Unit, Type "B" -

a. The final T/O&E, mentioned in paragraph above, will be ready for submission to the Chief, AFSWP, in the near future. It will then be a matter of coordinating with the Army, Navy, and Air Force, both for approval of the organization and in preparation for the activation of the organization. It is believed that formation and training of this Unit will require a period of two or three months, and that the Unit would not be prepared to execute any assigned project problems, as required in the mission of the Operational Development Section, until the completion of this formation and training period.

b. When activated, Special Weapons Unit, Type "B" will constitute the AFSWP field organization for implementing the coordination through established agencies of the radiological safety measures of the Armed Forces. The Unit will implement coordination by -

(1) Participating as a Joint Radiological Safety Task Group or Unit on atomic tests.

(2) Establishing data upon which may be based joint standards or monitoring techniques for the Armed Forces.

(3) Being constantly prepared to present, as requested from established Civil Defense agencies, technical assistance concerning all Radiological Defense matters.

(4) Conducting such tests and studies, as assigned, in order to assure a joint approach to the problem of Radioactive Warfare for the Armed Forces.

12. In furtherance of the first mission of the Section - Planning and development of organizations, operations, and procedures for the Armed Forces in conducting defense - it was requested that student operational problems, required by the Radiological Defense Schools at the Chemical Corps Schools, Army Chemical Center, Edgewood, Maryland, and the U. S. Naval Damage Control Center, Treasure Island, California, be forwarded to the Operational Development Section. The problems represent the thought of Radiological Defense trained representatives of the three Services and their respective branches, and a careful study and analysis of them will assist materially in the drafting of recommendations for radiological defense organizations for the Armed Forces.

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ANNUAL REPORT OF THE DEFENSE MATERIEL SECTION OF RADIOLOGICAL DEFENSE DIVISION, AFSWP

1. Late in the summer of 1947 preliminary efforts were made toward the establishment of committees to coordinate, under the AFSWP Charter and Research and Development directives, the defense material requirements of the services. Two committees were formed and have functioned as follows:

a. Radiological Instrumentation

An investigation of the activities of all military agencies and the AEC in the field of instrumentation has been made. A report has been compiled and has been forwarded to the RDB.

This Committee has completed the writing of military characteristics for the radiological instruments necessary for atomic warfare. A report covering these characteristics has been forwarded to the RDB.

A subcommittee consisting of one member from each of the three services has made recommendations as to which services have had primary cognizance for the development of various instruments.

b. Radiological Protection Committee has divided its work into two primary subcommittees

(1) Individual Radiological Protective Devices Subcommittee. A historical study of research and development is being conducted. The Chemical Corps has submitted a report to the subcommittee on estimated requirements of the Armed Forces. This report has been studied and approved by the various services' representatives and the subcommittee. At its meeting on 13 January 1948, the subcommittee submitted to the main committee the following recommendations:

(a) That for the present only individual protective devices which will protect against inhalation, ingestion, and action through the skin of radioactive materials, exclusive of neutron and gamma radiation, be considered.

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(b) That a program for the research and development of radiological protective devices be initiated by the Department of the Army and the Department of the Air Force.

(c) That special requirements for protective devices peculiar to atomic warfare be incorporated into the present military characteristics for protective devices in regard to chemical and biological agents.

(d) That all existing individual protective devices be tested to determine the degree of protection afforded in conformity with the military characteristics as submitted to the subcommittee by the Chemical Corps.

(e) That all testing and research in the field of individual protection of any of the services concerned be presented to this subcommittee for consideration and such coordination as necessary.

(2) Radiological Decontamination Subcommittee.

This committee has thus far determined that the Atomic Energy Commission is investigating the problems of radioactive decontamination as they apply to laboratory and factory, and that the Department of the Navy is investigating the problem as it pertains to naval vessels, naval bases, air stations, and aircraft. These investigations are expected to develop general principles and broad techniques which may be generally applicable, but they will necessarily be directed to solution of the special problems peculiar to the Atomic Energy Commission and the Department of the Navy. It has become apparent that the Department of the Army and the Department of the Air Force have no active program designed to investigate their needs in this field.

It is believed that radioactive decontamination is part of the general problem of decontamination of toxic materials whether they be radiological, chemical, or biological. The possibility of simultaneous use of radiological, chemical, and biological agents indicates that the investigation of radioactive decontamination should go hand in hand with the investigation of chemical and biological decontamination. This subcommittee has recommended to the Radiological Protection Committee that the Department of the Army and the Department of the Air Force initiate a program designed to investigate their needs in this field and to take necessary action to see that these needs are satisfied by proper research and development. The subcommittee has further recommended

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to the Radiological Protection Committee that the responsibility be assigned to appropriate agencies for performing the research and development of materials, equipment, and necessary techniques for the radiological decontamination programs of the Department of the Army and the Department of the Air Force.

2. Starting in September 1947, the Defense Materiel Section furnished the facilities to outline the instrument and materiel requirements for the Radiological Safety Group with Operation "Sandstone". During the Operation extensive field testing of a wide variety of radiac instruments was carried out. These instruments included, in addition to a number of standard models, several of which were developed specifically for the Operation. As a result of these tests, a large amount of information has been obtained on the usefulness of these instruments for field work. Many of the types tested proved quite satisfactory although none could be considered as the ideal instrument for military or civilian defense purposes. However, sufficient information was obtained to permit the design in the near future of instruments which should satisfy quite adequately the requirements of the National Military Establishment. It is considered that the gains from this type of field testing could not be obtained by other means except over a period of years.

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ANNUAL REPORT OF THE [redacted] SECTION OF
RADIOLOGICAL DEFENSE DIVISION, AFSWP

Reference: (a) JRDB letter 88/4.5 dated 14 October 1947.

(b) Minutes of Meeting of AFSWP Radioactive Warfare Study Group held at Los Alamos 18 February 1948.

(c)&(d) Papers and minutes presented at first meeting of Joint MED-ANC panel on Radioactive Warfare.

(e) Joint Strategic Planners paper on military uses of radiological warfare dated 14 June 1948.

(f) Progress Report #2, dated 23 June 1948.

1. On 14 October 1947 a directive was received from the Research and Development Board for the Armed Forces Special Weapons Project to conduct a study of the feasibility of the use of radioactive materials for military purposes (see reference a). Steps were undertaken to initiate this study in conjunction with the Atomic Energy Commission. On 17 February 1948 a meeting was held at Los Alamos in which members of the various military services and the Atomic Energy Commission participated. At this meeting a program for the study of the feasibility of radiological warfare was drawn up. The study was broken down into five categories:

a. Medical
b. Production and Chemistry
c. Dissemination
d. Tactical and Strategic Employment
e. Defense

2. The important points which should be studied within the various categories were outlined at this meeting (see reference b). At this time the AFSWP study was interrupted by the departure of many of the personnel involved to Eniwetok for Operation "Standstone".

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3. In May 1948 a joint MED-AEC panel on radiological warfare was organized and this panel held its first meeting on 23 May 1948 at which papers were presented on the following subjects:

a. Desirable Military Characteristics
b. Chemical Separation Problems and Possibilities
c. Biological and Medical Considerations
d. Necessary Types of Data for Munitions Evaluations
e. Synthesis of Specific Materials
f. Defensive Considerations.

4. It was the conclusion of the panel in this meeting that greater emphasis should be placed on the utilization of gamma emitters for producing casualties for external radiation exposure than on beta emitters for producing internal hazards, since it was felt that the prolonged effects from the latter would be a serious drawback to their military use. The possibility of producing specific radioactive materials using excess neutrons from the pile was also expressed at this time, and tantalum was considered as the most logical choice. The papers presented at the meeting are included in reference g and the minutes in reference d.

5. Since this meeting the studies of radiological warfare have proceeded at a greatly increased rate. A staff under the direction of Dr. Noyes has been investigating the many aspects of this problem. The work within the military establishment has been coordinated by the AFSWP and has been pointed primarily toward the military use of radioactive materials and the problems involved in their dissemination. The RAND project was requested to supply information on the protection required for delivery personnel. Preliminary steps of this investigation have been completed and the results will be available shortly. It appears that because of the scattering of the gamma rays by air that "shadow" shielding, i.e., the placement of a panel between the radioactive material and the delivery personnel, will not be feasible. Therefore, all shielding requirements will primarily be based on completely surrounding the radioactive material with a shield.

6. The Chemical Corps has been assembling available information on existing weapons which might be used to disperse radioactive agents. This would include the size of the area affected, the particle size of the dispersed material, and other characteristics which would be needed in order to evaluate a weapons' effectiveness for such distribution.

7. The Joint Strategic Planners have made a study of the possibility of radiological warfare for military use and a paper has been submitted to the panel for guidance in this field. (see reference e). This group has also been asked to consider the question of the time scale which should be used in arriving at any program for the development of radiological warfare.

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8. Studies are underway to determine the requirements of radioactive material to produce a given radiation intensity over an area. Previous calculations have varied from 10^5 to 10^6 curies per square mile. Additional calculations are being made by Doctor Winsche and Doctor Plesset of MAID and they are revising the calculations made in their preliminary report. However, it is felt that no calculation can be considered final, and therefore field tests are being planned to check this factor. A preliminary test will be made with a large Ba-La source (10^3 curies) about 15 July. A second test is being planned in which a large number of small sources, probably 1000 1 curie samples of tantalum, will be used. These small sources will first be placed around a regular grid, and the intensity produced throughout the area measured with portable meters. Later the distribution will be altered in order to make actual measurements of the importance of distribution in producing a radioactive field. This information is considered absolutely necessary before work can be commenced on the design of a weapon to disperse the radioactive material. A full scale field test in which radioactive material would be dispersed and in which attempts would be made to decontaminate has been suggested by the CAS of the MDB. It is felt that it would be impossible to conduct such a test in the near future because of lack of adequate information, but that this should be the eventual goal of the radiological warfare program.

9. In the chemical field investigations are being made of the possibilities of producing radioactive tantalum in the piles. It is planned to make small amounts at Oak Ridge in the near future and studies will also be conducted at Hanford. It is felt that the separation of radioactive zerconium-columbium from the fission product waste is not feasible in the near future and that emphasis should be played on the separation from the Redox process when it comes into use two to three years hence. The present status of the studies being conducted on radiological warfare is summarized in reference f.

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ANNUAL REPORT OF THE MEDICAL SECTION OF RADIOLOGICAL DEFENSE DIVISION, AFSWP

I. Training

A radiological medical training program encompassing two levels was established and conducted by the Medical Section, RDD, during the past year.

A. The lower level consisted of a five-day indoctrination and orientation course entitled "Medical Effects of Atomic Explosion" and was conducted at the Army Medical Center once every five weeks. Six hundred and seventy-six medical officers and civilian doctors (403 Army and Air Force, 94 Navy, 45 USPHS, 73 Veterans Administration, and 61 others) completed this training during the five sessions. The members of this Section participated in the lectures, conducted the school, and made all arrangements for the faculty and text material. The lecture material and films used for this course have been distributed to many agencies of the government and civilian institutions on request.

B. The higher level of training was divided between a course at the University of Chicago and on-the-job training of individuals at intallations of the Atomic Energy Commission.

1. A special course at the University of Chicago was established for the AFSWP at the request of this Section. Ten Air Force, four Army, and two Public Health officers attended the course and on completion of their training, the students were sent to installations of the AEC for approximately two months' on-the-job training. On completion of this phase, they will return to their basic service.

2. Informal on-the-job training was conducted at Los Alamos Scientific Laboratory (6); Clinton Engineer Works, Oak Ridge, Tenn. (3); Monsanto Chemical Co. project at Dayton, Ohio (1); the Hanford Engineer Works, Richland, Washington (1); and the Radiation Laboratory at the University of California (2). These men all occupied positions in various Divisions of the installations and also received general orientation training.

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C. Plans were formulated with the University of Chicago and the University of Rochester for courses in the Medical Aspects of Nuclear Radiation for the next scholastic year. Because of the shortage of personnel available in the Armed Forces and the requirements of the University of Chicago for a minimum of twenty-five students, it was later found necessary to discontinue the Chicago course. A substitution for this course has been presented in the Fellowship Training Program of the AEC and it is expected that the Armed Forces will have students in that program and at the University of Rochester.

II. Operation "Sandstone"

A member of this Section was appointed as the Radiological Safety Officer for Operation "Sandstone". This necessitated the formulation of medical requirements for the participants in the operation and formulation of medical policies as to exposures and as to hazards that might arise as a result of the Operation. The administrative details necessary for the collection of physical examinations and laboratory reports were handled by this Section. Two members participated in Operation "Sandstone" as members of the Radiological Safety Unit.

III. General

A. The following medical meetings were attended by this Section:

1. Conference on Biology and Medicine at Brookhaven National Laboratory at Upton, L.I. in October.

2. American Medical Association at Chicago for which technical data and coordination were furnished for the Armed Services atomic medicine exhibit.

3. Meetings of the Atomic Bomb Casualty Commission of the National Research Council.

B. Papers on medical effects of atomic explosion were given at many local, state, and county medical associations throughout the United States. A medical talk was given for the AFSWP at the Atomic Energy Conference at Ft. Belvoir in September.

C. Assistance has been given Sandia Base in arranging for medical personnel for the station hospital and liaison with the Hospital Construction Division of the Office of the Surgeon General regarding the construction of the new station hospital. Assistance has been given to military personnel residing on installations of the AEC in arranging for their medical service.

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D. Technical advice and comments were made on a motion picture being produced by the Air Forces depicting the medical effects of atomic explosion.

E. Papers and articles passing through the AFSWP were commented upon for technical accuracy and security relative to their medical aspects.

F. A continuing study is being made upon human nuclear radiation tolerance by an AFSWP Group. The conclusions drawn thus far by this group are not final and will not be made so until further confirming studies within the medical profession have been made.

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REPORT OF RADIOLOGICAL DEFENSE DIVISION PARTICIPATION IN OPERATION "SANDSTONE"

1. During the period from September 1947 through June 1948, a majority of the officers of the Radiological Defense Division, Armed Forces Special Weapons Project, were assigned temporary additional duty with Joint Task Force SEVEN. During the course of the operation, eleven officers participated as members of the RadSafe Group, both in the planning phase in Washington and later in the test area at Eniwetok.

2. In September 1947, Colonel J. P. Cooney, MC, USA, was invited by Lt General Hull, Commander of JTF SEVEN to participate in the forthcoming Atomic Bomb Tests at Eniwetok as RadSafe Officer. The responsibility for the establishment of a RadSafe Group under the Task Force was assigned to Colonel Cooney, who recommended that the staff for this Task Group be composed of a nucleus of officers assigned from the Radiological Defense Division, AFSWP. Accordingly, Task Group 7.6, the RadSafe Group, was organized with Captain F. I. Winant, Jr., USN, Chief of the Radiological Defense Division, AFSWP, assigned temporary additional duty with the Task Force as Commander, TG-7.6. At that time five officers and one civilian of the Radiological Defense Division were assigned temporary additional duty with JTF-7 and assumed duties on the staff of TG-7.6.

3. During the period preceding the departure of the Task Force for the Test site, the TG staff assisted Colonel Cooney in compiling the RadSafe Plan of the Task Force Field Order and drafted safety rules concerning operations in radioactive areas. Logistic requirements, including specifications for survey instruments and special radiological defense material for the operation were drawn up and procurement initiated. Specially trained radiological monitoring personnel were selected by name for temporary duty with TG-7.6 from the graduates of the Joint Radiological Safety Officer courses and orders requested from the services for these personnel to report for temporary duty with JTF-7. Special physical examinations required of all personnel of the Task Force whose duties would involve exposure to radiation were screened by the medical Task Unit organized under the Task Group and a system of maintaining exposure records initiated. Officers of the task group assisted in the overall planning for Operation "Sandstone", both in the technical and administrative phases, as advisors to the staff of JTF-7.

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THIS DOCUMENT CONSISTS OF 2 PAGES
NO. 3 OF 5 COPIES, SERIES A

4. In September when plans were being drawn up for Operation "Sandstone", the AFSWP submitted a program of recommended tests which should be carried out in order to measure the nuclear radiation effects of the atomic bomb detonations. These tests included the measurement of the gamma and neutron radiation as a function of distance and time and also the measurement of shielding provided by various materials against this radiation. A number of projects were set up to implement this program, some of the items being covered by work carried out by personnel from Los Alamos and others carried out by the military services. Those being carried out by the military services were under the direction of personnel from the AFSWP working within Task Group 7.6 and with the assistance of members of the Bureau of Ships, Bureau of Yards and Docks, Bureau of Medicine and Surgery, and Bureau of Aeronautics, U.S. Navy, and the Chemical Corps. As a result of these projects, the measurements were obtained for the gamma and neutron radiation as a function of distance. Data was obtained on the absorption of both gamma and neutron radiation by steel and concrete, and this data will be susceptible to scientific analysis. The gamma radiation exposure obtained by drone planes operating within the clouds from each of the explosions was measured. The particle size of the material in this cloud was measured by means of cascade impactors and this type of measurement was also made for the dust kicked up on the surface. Attempts were made to determine the effectiveness of field collective protectors in providing protection against the radioactive dust, but this project was successful only in determining the resistance of this equipment to the blast, since the radioactive dust did not pass near a collective protector while it was operating. Aerial surveys of ground contamination were conducted with a C-47 plane and on the basis of this work information has been obtained which should be extremely useful in planning similar operations in the event of atomic warfare. Sufficient data was obtained to permit calculation of the attenuation of gamma radiation above a crater. Studies of Operation "Sandstone" also included measurement of the extent of thermal radiation and its effect on various materials. The detailed results of all these experiments are now being analyzed in the Radiological Defense Division, AFSWP.

5. Task Group 7.6 was assigned the task of implementing the radiological safety functions during Operation "Sandstone". Approximately 80 officers and civilian scientists and 26 enlisted personnel comprised the RadSafe Group. Certain of the personnel were assigned to logistic duties, scientific field testing, laboratory work and instrument upkeep and repair, but the majority of the officers carried out aerial and ground monitoring and survey missions in the test areas. On board the BAIROKO and Mt McKINLEY plotting teams kept the Task Force Commander advised at all times of the radiological situation in the test areas. From the experience gained in Operation "Sandstone" in monitoring procedures, survey methods, instrumentation, decontamination and training of RadSafe personnel, the Radiological Defense Division is compiling a Technical RadSafe Report.

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PROJECTED SCHEDULE OF ACTIVITY OF THE

TRAINING SECTION, RADIOLOGICAL DEFENSE DIVISION, AFSWP

FOR AUGUST 1948 TO JULY 1949

1. In September, this Section will attempt to place liaison relations with the Office of Civil Defense Planning on a more formal basis than heretofore. At present, liaison consists only of informal exchange of conversation and minimum necessary administrative letters concerning enrollment of civilians in service schools.

This Section will attempt to coordinate the Radiological Defense plans of the Armed Services and the OCDP in general, and specifically will press upon the services some commitment as to their various responsibilities in defense of the C/I, which should help to clear the picture for OCDP. It is hoped that the service commitment, or refusal to make one, can be formally recorded in correspondence from Senior Headquarters.

2. The Radiological Defense Manual, Volume II, will require a chapter on Operations and Training. It is contemplated that in conjunction with the Operations Section of the RDD, drafting of this chapter will be actually underway early in September 1948, and it is estimated that about one month will be necessary between the original rough draft and the final form for inclusion in the printed manual. This project should occupy about one-third of the working time of one trained officer. No expenditure of funds is involved.

3. At the present time all subcommittees of the JRSTC have assembled and submitted final reports. The Report of the Schools Subcommittee has not been presented on the floor of the JRSTC, as of 10 August, in accordance with the request of the Chairman of the JRSTC. On 11 August 1948 and thereafter, the Steering Subcommittee will meet for consideration of the combined subcommittee reports with a view toward preparation of the final JRSTC Report prior to the calling of a meeting of the full committee. This procedure has been adopted to expedite consideration of the final report. The time schedule is dependent upon the deliberations of the Steering Subcommittee and the JRSTC as a whole, but this Section is scheduling events and pressing for early submission of that report. It is hoped that the final report of the JRSTC will be in the hands of the Chief, AFSWP and the JCS within two weeks of the date 23 August 1948. All personnel in the RDD are involved in the activity of the JRSTC as a whole, and during the past year have been active in at least one subcommittee. This Section acts as the Secretariat and finds that the administration of the records of the JRSTC and the preparation of the reports occupy about one-fourth the time of one officer and one secretary. The function of the JRSTC itself does not involve expenditure of allotted funds but its deliberations and reports will bear very heavily on the request for appropriations and their expenditure.

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4. Included in the future plans of this Section, and inserted in the final report of the JRSTC, is a plan to continue a part of the functions of the present Schools Subcommittee of the JRSTC in the status of a Joint Advisory Panel to this Section. It is contemplated that this Panel will also have review and inspection functions over various Radiological Defense service schools, particularly joint schools, and should be constituted of members assigned on additional temporary duty to the AFSWP for the purpose of acting in an advisory capacity only. No authority for review of the activity of the NDD is contemplated. The Panel should actually be assembled and activated after submission of the final JRSTC report, approximately in September 1948, and should remain continuously on call for advisory duty and intermittent visits to the Radiological Defense schools. The personnel required are: one officer each from CNO, OPS6; B/O&T, GS USA; D/T&R, USAF; USPHS; AFSWP, and the visits and review mentioned above will consume an indefinite fraction of the working time of the officers involved. Travel and expenses of this Panel will not affect Training funds.

5. Planned policy of this Section, confirmed by committee agreement, calls for the individual armed services to administer basic radiological defense and indoctrination of all personnel by use of their own channels and facilities. However, the AFSWP and this Section, in meeting the responsibilities of its charter, must necessarily insure that skeleton or minimum nucleus information promulgated by each of the services is joint and standard throughout. To effect standardization of the minimum basic education issued to 100% of all armed services personnel, it will be necessary for this Section from time to time to forward new information and training aids to each of the services for further promulgation through service channels. This relay of information will be an intermittent but continuous operation. The cost to the AFSWP is indefinite but it is believed that planned allocation of an approximate sum of $150,000 is not excessive in view of the need for stimulation of a program of this scope in the armed services.

6. This Section of the AFSWP has a further specific interest in basic radiological defense indoctrination, namely, promulgation of joint standard information to long-term service schools such as Service Academies, Naval General Line School, Command and General Staff School at Fort Leavenworth, etc. This indoctrination is to be carried out by members of the faculties who have themselves graduated from Radiological Defense schools at a higher level and the material they will present has been outlined in a series of eight lectures. As of the present time, this series has been approved and the actual printing is accomplished by the Chemical Corps School, Army Chemical Center, Edgewood. Distribution to each of the services has already commenced and will be continued. Complete distribution of this lecture series should be completed in September 1948. The cost to this Project has not yet been determined but there is a strong possibility that a requisition from the Chemical Corps will be received requesting coverage of the expense of the actual printing of this material.

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7. The AFSWP and this Section will have a further direct interest in basic Radiological Defense indoctrination with respect to officers in attendance at the senior service colleges and high ranking officers on duty in the Washington area. This indoctrination is accomplished in a coordinated series of six lectures specifically arranged for consumption by senior officers. During the past year, this series was presented by lecturers from Headquarters, AFSWP. The time consumed in this presentation was found to be an overload. During September, October and November, in order that the presentation during the next academic year may be accomplished without interfering with the operations of this Headquarters, the Training Section will attempt to place under contract certain selected civilian educators who are qualified to present the same text material. It is hoped to assemble a "stable" of lecturers numbering between eight and twelve who will be available on reasonable notification to travel to assigned locations for presentation of this series. On the basis of past experience, estimating that each civilian called upon will use three or four days of his time, approximately six times per year, it appears that an expenditure of $10,000 will be necessary to handle travel and reimbursement of this lecture group.

8. Joint committee action and the implied responsibilities of this Section have resulted in assignment of the duty of supervising design and production of a high quality training motion picture for use in radiological defense indoctrination of all the services and for eventual use by a civil defense organization. This project is regarded as of vital importance in that a properly designed motion picture may well be the key to quick and wide spread indoctrination of large numbers of personnel in radiological defense. Preliminary exploration of the means and material for the motion picture has been commenced. Formal assembling of material and activation of contracts, etc. should commence in September 1948. Assuming that no obstacles arise, the minimum time for production of a motion picture of the quality desired should not be less than four months. Production of this picture should be actively and continuously supervised by one well qualified officer as technical advisor. It is further contemplated that the cost of this project to the AFSWP will not be less than $200,000.

9. The Training Section will continuously administer financial assistance to the joint Radiological Defense courses at Treasure Island and Edgewood and the third school planned for Keesler Field, Biloxi, Mississippi. AFSWP funds will be used to augment training material, text, and training aids needed by the schools but unforeseen in arrangement of allotments in the service actually responsible for the conduct of the courses. Requests from the schools for such assistance will be honored within reasonable limits. Present planning indicates that approximately $30,000 of AFSWP Training funds should be earmarked for this purpose.

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10. The joint services, aware that the output of the fall Radiological Defense Officers Course willnot meet the requirements of the armed services as to volume of production of graduates, by mutual agreement and by committee action have indicated a desire to establish a parallel short practical course to train an assistant or junior counterpart of the Radiological Defense Officer for tactical operational use. In October 1948 the Training Section will supervise and, with the assistance of the faculties at Edgewood and Treasure Island, will assemble a curriculum for this short practical Radiological Defense Course. After review and standardization of the content material, this curriculum will be approved and issued to the services in order that they may conduct instruction by locations most suitable and advantageous to them. It is believed that the services in making a request for appropriations for the fiscal years 1949 and 1950 did not foresee the financial obligations which will be incurred in the establishment of this course and will probably need the assistance of the AFSWP funds to the extent of a minimum of $10,000 for each service, or a total of $30,000.

11. Joint service agreement and committee action call for the insertion of necessary subcurricula in appropriate service schools for the training of enlisted radiac instrument technicians, medical laboratory technicians (including photo-dosimetry), and enlisted monitors. While these courses will be conducted in established service schools they will be promulgated as part of other courses peculiar to a particular rate, position, or service. The policy of joint standardization will be maintained by AFSWP review. It is believed that the services have not foreseen the financial requirements inherent in the establishment of this course, which will be moderately heavy as to the provision of technical equipment. Of available AFSWP training funds, a minimum of $60,000 should be allowed to assist in the establishment of these courses in the various services.

12. Joint service agreement and committee action call for the training of all service medical and dental officers at the "technical training level". This training will be accomplished in a joint course, similar to the Radiological Defense Officers Course, which will consume approximately 80 class-room hours. Actual location of the school or schools to handle this training has not been decided. This Section will be responsible, in about October 1948, for assembling the necessary joint curricula and will be assisted in this, probably, by medical personnel assigned to the RDD, Sandia Base, and Los Alamos. The Surgeon General and the Bureau of Medicine and Surgery will be given an opportunity to review and comment on the content of the curricula. $75,000 of the AFSWP training fund should be earmarked to stimulate and augment the establishment of this course.

13. The training of Reserve components will be accomplished by the promulgation through the service channel of Joint Extension Course, plus a two week class-room training of Reserve Officers at one of the

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Joint Radiological Defense schools in a special curriculum. The extension course, at present under preparation and review, is three-fifths completed and should be ready for distribution to Reserve Officer training channels in about October 1948. The class-room course for Reserve Officers has been prepared, reviewed, and conducted several times in preliminary or interim status. Final review and endorsement of this training should also occur in about October. It is expected that the cost of class-room training of Reserve Officers at the established Radiological Defense schools and the cost of issuing the extension course will be either negligible or covered by other allotment and will not affect the AFSWP funds.

14. The AFSWP has been committed on a policy of liaison or assistance to the OCDP, including supervision of Radiological Defense Training of a number of key civilians in the joint service schools. It is estimated that approximately 20 students sponsored by the OCDP will be trained in the schools during the ensuing year and a possible expenditure of $20,000 must be allowed for this purpose.

15. On the same policy commitment as above, when requested by the OCDP this Section of the AFSWP will be required to assist and stimulate radiological defense training in the Civil Defense Organization to the utmost of its resources. This will include a heavy demand for necessary equipment, text, information, training aids, etc. This demand will probably not be made before the first of 1949 and it is felt that a minimum of $100,000 of AFSWP training funds will be necessary to cover this commitment properly.

16. The Training Section of AFSWP is responsible for liaison administration of the Joint Radiological Defense Postgraduate Course and for the financing of that part of the course which is conducted at the U. S. Naval Postgraduate School. This is a continuous liaison administration and the AFSWP acts as a supervisory agent of the Joint Armed Services. An expenditure of $50,000 for instructor services by the Naval Postgraduate School is required and has been committed as of this date, and an expenditure of approximately $3,000 for laboratory equipment has also been accomplished.

17. In September, fifteen medical officers from the joint services will be enrolled in the Atomic Energy Commission Medical Fellowship Program for advanced courses in medical aspects of the Radiological Defense. The AFSWP as the agent of the Joint Armed Services will be required to supervise the academic content of this course. The transfer of training funds to the AEC amounting to approximately $15,000 will be necessary.

18. Volume II of the Radiological Defense Manual should be ready for printing and issuance about January 1949. The plating and printing of the required number of copies (approximately 40,000) of this manual will commit AFSWP training funds to the extent of $100,000.

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19. Committee action has delegated to this Section the responsibility of keeping certain files of personnel, both service and civilian, who have been trained at the technical training level or above for Radiological Defense. This is a time consuming and continuous duty, and in order that these lists may be kept up to date as to content and as to location of trained individuals, it appears that the job would consume better than one-half the time of a trained personnel file clerk.

20. It should be noted here that although not directly concerned with Radiological Defense training, other training, namely, the Military Atomic Energy Postgraduate Course has already required a commitment of $20,000 of OFCMP training funds.

21. The scope of the requirements outlined above in the Training Section of the RDD indicates that the officer personnel in this Section should never decrease below the present staff, which now consists of two officers. The organization further calls for a CAF-5 Secretary-Stenographer, which position is adequately filled, and a CAF-4 Stenographer, which position is at present vacant. It is considered vital that the latter position be filled as soon as possible.

Since, in the development of a Radiological Defense training program, which is new and without precedent, no particular service background can substitute for direct contact over a period of time with the activities of this Training Section, it is believed desirable to have an additional officer on duty in the Training Section, both to carry part of the administrative load and to train by contact or by exposure to the new administrative problems which continuously arise, in order that the above-mentioned minimum staff may be maintained in spirit as well as in fact.

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RECAPITULATION OF RDD TRAINING SECTION PROJECTS

PROJECT (What)	WHEN	HOW LONG	PERSONNEL	MONEY PLANNED	SUMS EXPENDED
Commitment of Services and Liaison with OCDP (1)	September				
Chapter on Operations and Training, Radiological Defense Manual, Volume II (2)	September	1 Month	One Officer		
JRSTC (3)	August	In Hands of JCS	All RDD Personnel Training Section Secretariat	Will affect Expenditure	
Joint Panel (4)	After JRSTC	Continuous Visits	Op 36, OAT, USAF, USPHS, AFSWP		
Promulgation of basic information for indoctrination (5)	Continuous	Continuous		$150,000	
Promulgation, supervision, and maintenance of indoctrination lecture series at long-term service schools (6)	August	Continuous	Schools Faculty	Indefinite Moderate Sum	
Six lecture series "Stable" of civilian lecturers (7)	Intermittent	2-3 day presentations	6-12 civilian professors	$10,000	
Motion Picture (8)	September	'Til Jan/Feb	1 Officer, Tech Advisor	$200,000	
Texts and Assistance of Rad-Defense Schools (9)	Continuous	Continuous		$ 45,000	

PRO. BY (What)	When	How Long	Personnel	Money Planned	Sums Expended
Establish Curriculum for Practical Rad Defense Course (Short) (10)	October		Schools Faculty AFSWP Review	$30,000	
Establish sub-curricula for Instrument & Laboratory Technicians and minimum curriculum for enlisted monitors, all services (11)	October		Schools Faculty AFSWP Review	$60,000	
Establish 80 hour Joint Course, Medical and Dental Officers (12)	October		AFSWP, Los Alamos, Surgeon Gen, BuMed Doctors	$75,000	
2 Week Training Period Reserve Officers, review and observation of Tech Schools (13)	Intermittent	Continuous	Panel-Visits		
Civilians in Rad Defense Tech Schools (14)	Continuous	Continuous	School Faculty AFSWP	$20,000	
Financial Assistance to Civil Defense Purchase of Equipment and Training Aids (15)	Nex Spring When requested		20 students	$100,000	
33 PG at USN PG School and 14 at Calif Pay PG School (16)	In Session	Continuous Administration		$ 53,000	$50,000 3,148
15 Medical Officers Advanced Medical Aspects AEC Fellowship (17)	September	Continuous Administration Supervision		$ 15,000	
Printing of Volume II Radiological Defense Manual (18)	January		AFSWP Personnel	$100,000	

Projects (What)	When	How Long	Personnel	Manner Planned	Sums Expended
Maintenance Guidance File and Organize File of Civilian Guidance (CW)	In Operation Continuous	Continuous	AFSWP Clerical		
		Military Atomic Energy Course			$20,000

4.2 -- Training.

4.2.1 — Advanced Education of joint student groups, both line and medical, will be administered by the Armed Forces Special Weapons Project as a joint agency representing the three services. This includes the three-year radiological defense engineers' postgraduate course and the advanced course in medical aspects at the University of Rochester, the AEC medical program, and and development of this program.

4.2.1 — Technical Training:

a. Radiological Defense Officers Course, conducted in joint schools administered by one particular service will be closely supervised and standardized as to curricula content by the AFSWP. Parallel medical courses will be likewise supervised.

b. Monitor, Technician, and other courses administered by each service will be standardized by the AFSWP as to minimum basic material presented. This group of courses will not necessarily require joint student participation and may include training unique to one particular service.

4.2.3 — Indoctrination will be conducted by the individual services for their own personnel. The Armed Forces Special Weapons Project will assist and augment this indoctrination by fostering continuous output of trained products of higher levels to act as instructors, by provision to the services of joint minimum basic information, and by sponsoring the conduct of certain joint courses affecting particular schools and ranking groups. This latter will include lecture series for senior ranking officers, senior service colleges, long-term sdrcice schools and service academies, and the joint extension course for reserve officer training. Recruit and field indoctrination

will come under the primary cognizance of the individual service concerned.

6.2 -- Education and Training.

The Defense Division will coordinate radiological defense training along the following lines:

6.2.1 -- Participate, guide and, through the chairman and Secretariat, administer the activity of the Joint Radiological Safety Training Committee in its preparation of a study of national needs for personnel to be trained in radiological defense. This division will also implement interim measures growing out of the considerations of that committee.

6.2.2 -- In all radiological defense training courses, maintain the joint nature of radiological defense training by standardizing course content, either directly by a review of curricula, or indirectly by setting requirements for the minimum basic information to be offered in a particular course.

6.2.3 -- As a joint agency representing the three Armed Services, administer the joint radiological defense postgraduate course, supervising the minimum requirements for enrollment of students, the financial arrangements for that part of the course conducted at the Naval Postgraduate School, and as a single reference office for academic contact with the U.S. Naval Postgraduate School, and through that school, with the selected civilian university. Financial contracts for the final two years of this course will be arranged individually by each of the separate services. Administration of this course must at all times be conducted by a single joint military agency and must never devolve upon the three services acting independently.

6.2.4 -- Technical Training

Sponsor and standardize technical training, which, although conducted in schools administered by the separate services, will be conducted for the most part in joint student groups. It must therefore be kept under the closest academic surveillance by a joint military agency. The most important

courses in this level are, of course, the radiological defense officers' courses at Treasure Island, Edgewood, and Keesler Field. The Radiological Defense Division, while pressing the services to produce as many officers trained at this level as possible, must insure that the quality of graduates is maintained and that the courses conducted by individual services at this level are maintained truly joint by presentation of identical curricula. This further applies to proposed medical courses which, when finally organized, whould be likewise conducted in joint student groups regardless of the location and administration of course. The latter policy must be originated and followed through by the RDD.

6.2.5 -- Indoctrination

Assist and augment indoctrination of all Armed Forces personnel. It is not possible or contemplated that the RDD of the AFSWP can take direct cognizance of the actual implementation of this indoctrination and therefore the training organization of the various services must be utilized. This indoctrination of large numbers of personnel can best be accomplished by allowing the services complete freedom to utilize their training organizations as they now stand. However, the RDD will retain an interest in this program to the extent that it will establish minimum joint radiological defense information for promulgation in those training organizations, will continue to provide the services with new information as it becomes available, and will furnish the services with such training aids and information as may become available to it from outside sources, such as the AEC, or an individual service. It is not expected that this procedure will neutralize the principle of joint training in radiological defense throughout the three Armed Services inasmuch as this indoctrination will be carried out within the services by personnel who have been trained in joint courses at higher levels of training.

There are certain key groups for which radiological defense indoctrination is necessary in which the RDD can take a direct interest. These well defined groups are the senior ranking officers on duty at Headquarters in the Washington area and officers in attendance in the various senior service colleges within the continental limits. There are also groups of officers attending certain service schools in long term courses such as the Naval Line School, the U.S. Military Academy, etc., where a clear cut joint indoctrination may be presented. The RDD will participate in the indoctrination program in these places by the formulation of lecture series and in the case of the senior colleges, by the actual presentation of these lectures. It is considered that a properly organized training motion picture film is of key importance in the indoctrination program. Further, this type of training aid is capable of such wide circulation and unique effect that, by mutual agreement, the RDD will be considered the logical responsible group for its draft and production.

6.2.6 -- Insure that the services carry out a program of radiological defense training in their reserve components, corresponding to the levels and courses of training as offered to the regular services. This is and will be done by the conduct of frequent short joint courses now established in the schools in regular components and the supervision of a suitable joint extension course, the drafting of which is already in progress.

6.2.7 -- Foster the training of the national public through the Office of Civil Defense Planning, its planning activity, and any future civilian defense organization which may be established. During the tenure of the Office of Civil Defense Planning, the RDD should maintain an active liaison with that office in order that their planning with respect to radiological defense and radiological defense training may be guided along lines which have been mutually

determined by the services and the JRSTC as most beneficial for national requirements. Further subscribing to the policy that defense of the Zone of the Interior is not a responsibility of civilian defense alone, but substanially overlaps into the responsibilities of all of the Armed Services, the RDD should press upon the senior headquarters of each of the services the acceptance of that policy, and should obtain from each of the services in writing an acceptance of that policy, including broad plans for meeting their inherent responsibility of defense of the Zone of the Interior, a commitment as to the extent in which each service plans to meet that responsibility and/or an official refusal or modification of that policy with recorded reasons therefor.

6.2.7 -- Appropriations and Finances -- The RDD, in coordinating fiscal arrangements with the three services and requesting its own allotments should insure that ample funds are available either in appropriations to the individual services or funds available to the AFSWP to finance the above training program. Such funds as are not in service appropriations and are placed in AFSWP should be allocated with such flexibility that they may be used in ways most beneficial for radiological defense program.

6.2.8 — Considering that all training now in progress for radiological defense, jointly organized or conducted individually by any of the services, is of an interim nature, the RDD should press for an early submission of the final JRSTC report to the Joint Chiefs of Staff. It appears, however, that this interim training will conform to the final overall radiological defense training program with very slight adjustment, if any. Therefore, the RDD should insure that no training now in progress is ever discontinued unless an acceptable substitute procedure, likewise conforming to the plan for the

eventual permanent training program is in existance. Upon submission of the JRSTC report to the Joint Chiefs of Staff, the function of that committee should return to the RDD of the AFSWP as should the responsibility for decisions and policy concerning joint radiological defense training. It appears that an advisory panel of representatives from each of the services will be of considerable assistance. However, the RDD should insure that with the establishment of that advisory panel no authority over RDD is vested in such a group which might result in inherent delay in making and effecting policy decisions with respect to joint radiological defense training by the RDD.

FUNDS AVAILABLE FROM 1949 APPROPRIATIONS FOR RADDEF TRAINING

"Training of Reserve Components at Industrial Plants".....$400,000

"Services of Instructors at Navy Postgraduate School".....✓ 50,000 ✓

"Training R.A., Navy, etc., at Industrial Plants"..... 250,000

"Training Pre-Rochester Course".....✓ 25,000

"Training at Radiological Safety Monitor Schools".....✓ 150,000

NOTE: Above received from Lt. Col. Jones, Fiscal & Logistics Division 1 June 1948.

Rad. Def.	U. S. Naval	PG	School..	50,000 ✓
Mil. At Energy	"	"	"	20,000
	Lab. Equip	U. of	Calif	3,145

21 JUNE 1948

REPORT
of the
SCHOOLS SUBCOMMITTEE
to
JOINT EDUCATIONAL SERVICES AGENCIES COMMITTEE

1. OBJECTIVE:

The objective of this Subcommittee, as defined by the Steering Subcommittee, is to recommend levels for undergraduate defense training based on the requirements of the Armed Forces to include:

A. Types of training required to fill each position and appropriate length of training period.

B. Type and number of institutions required per hundred students and their available plant.

C. Training organization and recommended relationship between each organization and the Army, Navy, Air Force and Joint Chiefs of Staff.

D. Participation in such training programs on the part of civilian [illegible].

E. Similar recommendations with respect to the training of medical personnel, as directed by JRSTC action of 18 December 1947.

II DISCUSSION:

In accordance with the early plan of the JRSTC, this Subcommittee succeeded the Interim Schools Subcommittee of JRSTC, which terminated its interim functions with the report of 18 November 1947. Actually, the membership of the Schools Subcommittee is practically identical with that of the Interim Schools Subcommittee so that, in effect, the Schools Subcommittee is a continuation since the inception of JRSTC as a result of study and report on training matters of immediate concern

to JRSTC. This final report is based upon continued observation of interim training instituted as the result of earlier recommendations of this Subcommittee and the reports of other Subcommittees of JRSTC insofar as practicable. The interim training programs have not been in effect long enough to permit this Subcommittee properly to evaluate the results. Continued assistance and advice by a joint panel is considered necessary for the coordination of overall Radiological Defense training.

Radiological Defense personnel must be trained at various levels. Operational positions should include monitors capable of reading the instruments, Radiological Defense Officers to interpret the readings, instrument repair men, medical specialists and others, up to the Radiological Defense Engineers specially educated in radiological matters who will be staff advisors to commanders of large forces. In addition, all personnel must be indoctrinated in the necessity for and means of radiological defense. The following discussion of the levels of training for radiological defense includes a consideration of the positions recommended in the report of the Medical Subcommittee dated 8 December 1947, and the Armed Forces Subcommittee report dated 6 January 1948.

A. Indoctrination

All service personnel, officer and enlisted, should be given a basic education to function in atomic warfare. Different groups will require different methods of presentation and scope of material. As is apparent, this training level is the bracket within which the national public as a whole must necessarily be included. This type of training should be inaugurated and thoroughly pursued by each of the Armed Services immediately. All military personnel should receive this type training. Flexibility in training methods is desirable. Indoctrination should be presented by each service within its own organization constantly, by lecture, pamphlet, manual, movies, drill and inclusion in all promotion and rating examinations. All combat and operational problems and war games should include radiological defense as should routine emergency drills in smaller units.

Medical indoctrination should be similarly conducted to include all of the "line" information plus the medical "slant" on all included matters. All medical personnel, nurses, technicians, medical NCO's and PO's should be indoctrinated on the job and in school courses associated with their specialties.

The joint nature of training at the indoctrination level will be maintained by the use of instructors trained in the joint courses conducted at higher levels.

The potential of a carefully planned complete motion picture on the subject of radiological defense for indoctrination of large numbers of personnel and as a training aid in all radiological defense courses, is unique. Such a film designed and intended for use by Civil Defense and rapidly mobilized Armed Forces, as well as by the regular services, should be placed in production immediately. The AFSWP, as a single coordinating agency, should supervise and finance this production with a view toward making the finished film available to the Armed Services for wide promulgation and, when directed, to the Civil Defense organization. The production of such a film series should not preclude efforts of each of the services to conduct supplementary radiological defense indoctrination by use of routine training films.

This program should be readily adaptable, using similar training methods and devices, for presentation to the national public through a civilian defense organization when directed by proper authority.

B. Technical Training

Personnel trained to actively defend against and minimize radiological damage are needed in operational positions, both in the Armed Services and in civil defense. This level embraces specialized personnel who may be required in technical positions within a defense organization. A system of education of medical personnel must parallel the above line training.

1. Line Officers

a. Radiological Defense Officers.

Immediately after Crossroads, it was apparent that technically trained officers were required within the services to provide adequate safety measures for protecting personnel from radiological hazards. Consequently, a "crash course" of five weeks' duration was established under the jurisdiction of the Joint Crossroads Committee. As a result of the "crash course," the presently operating six weeks' courses at Treasure Island and the Army Chemical Center were developed to provide advisors to various command levels. This six weeks' course is designed to provide officers graduating with a basic knowledge of nuclear physics, hazards of radiation, concepts of atomic warfare, use and care of detection instruments, decontamination, effects of radioactivity on personnel and protective measures to be taken in the event of atomic attack. Students for this training should be commissioned officers from any branch, arm, service or corps (including Medical Service Corps), who have backgrounds of college physics and mathematics. Upon completion of this course, an officer is returned to his regular station equipped and qualified to assume the primary or additional duty as Radiological Defense Officer in the command to which he is assigned. At this level the principle of joint training should be actively maintained by use of jointly staffed instructor groups teaching joint groups of students. (For Curricula, see Tab A).

b. Unit Radiological Defense Officer (Army)
Assistant Radiological Defense Officer (Navy)
Radiological Survey Officer (Air Force)

The output of the Radiological Defense schools operating currently is insufficient and because of the rigid pre-requisites, it is becoming increasingly difficult to fill quotas in those schools. In addition, it is not essential that officers of small units acquire certain theoretical knowledge provided by the six weeks' course. The course designed for this purpose should be practical. In view of the above, it is considered advisable to inaugurate a short course of perhaps two to four weeks' duration designed to train operational personnel in approximately the same scope of training presented in the regular six weeks' course, excluding certain theoretical information. These courses could be conducted at such locations as would be most convenient for the individual services. This would enable the services to lower the educational entrance requirements and would provide a large number of trained officer personnel at the technical level. Officers who have completed this training will be adequately qualified to perform radiological duties at the regiment, battalion and company levels in the Army and Marine Corps, as Assistant Damage Control Officers in the Navy and at group and squadron levels in the Air Force. The rate of production over a cycle of five years of both of the above categories should be such as to train sufficient personnel for all the positions requiring radiological defense officers.

c. Radiological Defense NCO

A requirement will exist for the training of enlisted men as technical assistants to officers referred to in a and b above. Each service should provide this type training in accordance with its requirements.

d. Monitors

This category of enlisted personnel will actually reconnoiter contaminated or hazardous areas. These monitors need only instruction in the proper use of instruments and equipment, an understanding of hazards and techniques of protection against radioactivity. Therefore, this course must be entirely of a practical nature. This training should be conducted as on-the-job training or included in courses of appropriate schools by each respective service in accordance with its individual requirements. (A suggested curriculum is appended, Tab B).

The scarcity of instruments at this time is a great obstacle to the proper pursuit of a training program for monitors.

e. Instrument Technicians

Instrument repair and maintenance courses should be included in the existing courses within the services which provide for training of radar and radio repair men, in order that all electronics maintenance personnel in the future will be able to maintain and repair radiac instruments. This type training, when established, should include coordination between authorities at schools conducting courses in electronics maintenance and authorities at the Radiological Defense Schools.

2. Medical

a. Technical training in medical aspects.

All Medical Department officers (Army) and all Medical Corps officers (Navy), exclusive of MSC, should receive three to six weeks' training in basic branch courses, advanced branch courses or in specially arranged courses.

b. Radiological Laboratory Technicians

This course will include photodosimetry, urine and tissue analysis for radioactivity, and other procedures adaptable to the diagnosis of radiation illness. In some instances it may be advantageous to decrease

the training period by dividing the above specialties and increasing the number of personnel trained. It is estimated that three such men will be needed per hospital and in each Army unit as low as division level and in equivalent units in the Navy and Air Force.

3. Reserve Components

Since the officers and enlisted men of the Reserve Components will be required to fill positions described in the preceding paragraphs in the event of mobilization, their training should parallel that of the regular radiological personnel. In view of the difficulties these personnel have in pursuing courses longer than two weeks' duration, reserve officers should be trained in a two weeks' resident course supplemented by outside study of the extension course now in preparation. The training thus acquired will approximate that of the six weeks' officers course referred to in Paragraph 1 b above. (For curriculum see Tab C).

4. Civilians

An all important requirement for civil defense personnel trained at this level exists. Considering the total numbers of the national population who must be protected, and the strong likelihood that a radiological catastrophe will involve civilians as a substantial or predominant proportion of the casualty group, it becomes apparent that complete training of a large number of monitors, instrument and laboratory technicians, medical and tactical advisory officials, etc., may well be the keystone of survival of the national public in an all-out atomic war. These should be trained to work in conjunction with armed services personnel in parallel positions or alone, by utilizing the same curricula and equipment now, or in the future, in use in armed services courses. The source and disposition of trainees should be intimately woven into their permanent occupation. For instance, instrument technicians may be drawn from the civilian radio repair trade, monitors from police

and fire departments and the postal service, the defense coordinating official from the faculties of high schools. The training at this level should be organized as one of the initial and primary efforts of the Office of Civil Defense Planning and of the civil defense in being when activated. Legislation should be fostered which will result in the establishment of a minimum of one school per each city of 100,000 population and above. The school itself could well be in any municipal building or school and presumably could offer instruction in all of the above-mentioned specialties simultaneously. A goal of one monitor per 500 population and proportional numbers in other specialties should be sought. AFSWP should be permitted a coordinating interest in this training as an extension of the overall joint policy for radiological defense. At the present time, until the civil defense organization is fully activated, assistance on the part of the AFSWP and the armed services should take a double form; active advice to the Office of Civil Defense Planning, and fostering a full and active radiological defense program in the services in order that, at the time so directed, matured and tested training techniques, curricula and equipment may be turned over to the activated civil defense organization.

5. Instructors

A wide variation of requirements for instructors exists. However, a graduate of any course at the technical level is considered capable of conducting indoctrination and, in some cases, with additional on-the-job training of instructing in courses which he has completed as a student. Instructors for the technical training level are automatically produced. As an example, for the sublevel of "Radiological Defense Officer", instructors will be available from among graduates of the next higher level or Postgraduate group. The Radiological Defense Officer graduate is qualified to teach the enlisted monitor and so on. In general and upon present estimates, for proper instruction at this level, the instructor-student ratio by number should be approximately ten instructors on duty per one hundred students in attendance at a school.

1. Line - [illegible] Requirement

A requirement exists for officer personnel well educated in both the medical and practical aspects of Radiological Defense to serve in staff positions in senior commands. These officers will function in positions and duties wherein they must provide authoritative and reliable advice to their commanders, formulate long range plans, administer a radiological defense organization in a large and complex military organization and frequently represent their commanders in coordinating with civilian experts and scientific groups. Compromising time consumed and academic background desired, it has been mutually agreed by the armed services that an officer educated to a Master's Degree level in sciences allied to Radiological Defense will be acceptable in this position. Accordingly, as the first interim step of the JRSTC, the three-year joint Radiological Defense postgraduate course was organized. It is indicated that the joint course as it now exists meets the requirements for that level of training and should be continued. Curriculum pursued at both the U.S. Naval Postgraduate School and civilian university is appended in Tab D. A production rate of 50 graduates per year is required to fill joint service needs.

2. Medical

A parallel requirement for medical officers exists for medical advisory and planning staff positions in the headquarters of large military commands and in large medical installations. A course of approximately one year's duration in the medical aspects of radiological defense, applied to the professional background of a qualified doctor (medical officer) should train that officer to function in the above staff position. This course should be jointly conducted to include all services and should produce a corresponding number of graduates (50) per year as its line counterpart. A pilot course at the University of Chicago and a contemplated course scheduled for the University of Rochester (Curricula appended in Tab E) standardized and modified as current conditions indicate should be developed to train medical officers at this level.

3. Reserve Components

Corresponding organized advanced education over an extended time period for officers in reserve components of the services does not appear practicable. However, within th[illegible]

[redacted] officers [redacted], by professional background, are already well educated in physics, medical physics, physical chemistry and radiochemistry. Such reserve officers who hold MS or higher degrees in those subjects should be identified by the services by assignment of a particular M.O.S. or by use of the IBM card index file.

4. Civilians

A sufficient reservoir of civilian scientists and medical personnel extremely well educated in subjects pertaining to radiological defense exists in university faculties, scientific and industrial laboratories, etc. It is expected that these scientists and medical personnel will be readily available and well qualified to serve at this level in civilian defense and in the national military establishment in periods of emergency or catastrophe. However, it is not expected they will be available in an active planning capacity until such time, except as presently associated with other government agencies. Accordingly, no formal education at this level for civil defense positions is indicated, since assistance in planning is available to the Director of Civil Defense during a non-emergency period by coordination with and reference to organizations now active, such as the AEC, AFSWP, the services and their associated scientific consultants.

5. Instructors

Instructor personnel for the advanced education program are continuously available and in place as members of the permanent faculties of the schools and universities utilized in the design of these courses; U. S. Naval Postgraduate School, Universities of California, Rochester, Chicago, etc. The instructor teaching load, in order to maintain the quality of this instruction, stated as a ratio of instructors to students, should not fall below 16 instructors per 100 students in attendance.

D. General

The objective of the training discussed in this report is to provide properly qualified personnel to operational organizations. The training to be conducted within individual organizations is not within the scope of this report, but is equally as important, and should not be overlooked. Each installation commander must insure that organization's performing the duties required to minimize the effectiveness of a radiological attack are properly trained and maintained.

Organizational (operational) training must be accomplished to provide necessary teamwork and coordination among the various phases of a defense system. A Radiological Defense organization will be only one part of a defense system and must be integrated into the total structure. A considerable amount of organizational training will be required to produce an effective radiological defense organization. It is contemplated that this training will be substantially standardized since it is dependent upon training discussed in this report, instruments approved by joint committees, and terminology established by joint action.

E. Present Status

1. The following interim indoctrination is in progress at the time of this report:

a. Army

Participation in 6-lecture coordinated series for senior officers.

Inclusion of 8-lecture series in curricula of long-term schools.

Use of Radiological Defense Manual, Volume I, as text at West Point.

Distribution of Radiological Defense Manual, Volume I, through Army enlisted men indoctrination by lecture, training films, armed forces talks.

Distribution of manual of medical aspects.

Use of training films.

b. Navy

Indoctrination of officers and enlisted personnel of all ships and stations.

Indoctrination courses conducted at fleet training centers and amphibious training centers.

Eight-hour coordinated lecture series included in the curricula of long-term Navy and Marine officer schools.

Participation in the six-hour coordinated lecture series for senior officers.

Indoctrination included in curriculum of Naval Academy.

Indoctrination course for damage control officers being conducted at Radiological Safety School.

Use of following publications and training aids:

USF 85
Manual of Radiological Safety - BuMed
Radiological Defense Manual Volume I
Training Films
Demonstration Kits

Directives for Organization and Training in Naval Fleet and shore establishments and Marine Corps have been issued.

c. Air Force

Participation in six-lecture coordinated series for senior officers (Air University and Pentagon).

Inclusion of 8-lecture coordinated series for long-term schools in curricula of those schools.

Use of training films.

Distribution of Radiological Defense Manual, Volume I, throughout Air Forces.

Distribution of manual of medical aspects.

Inclusion of short Radiological Defense indoctrination in schools within Air University and Air Training Command.

2. The following interim technical training is in progress at the time of this report.

a. Joint Radiological Defense Officers' course at U.S. Naval Damage Control Training Center, Treasure Island. Production 50 officers/7 weeks.

b. Joint Radiological Defense Officers' course at Chemical Corps School, Army Chemical Center, Md. Production 50 officers/7 weeks.

c. Joint Reserve Officers two weeks' course at both above schools. Production varies.

d. Firm plans for organization of third joint Radiological Defense Officers' course, to be administered by Air Forces at Keesler Field, Biloxi, Miss. This school is scheduled to open in the immediate future, and will be a counterpart of Treasure Island and the Army Chemical Center. Scheduled production, 40-50 officers/7 weeks.

e. Joint coordinated medical lecture series given at The Army Medical Center, Washington, D. C., and Naval Medical Center, Bethesda, Maryland. Production approximately 100 medical officers and civilian MD's a month.

f. Preparation of joint extension course for reserve officers by Radiological Defense school faculty at the Army Chemical Center under auspices of AFSWF.

g. Totals trained at this level to date:

(1) Radiological Defense officers:

Army	164
Navy	265
Air Force	94
USPES	8
Civilian	31
TOTAL	562

(2) [redacted] Lecture Course at Army Medical Center

Army & Air Force	403
Navy	94
USPHS	45
Civilians	130
RAF.....	4
TOTAL	676

(3) Reserve Officers:

Army	43
Navy.....	51
Air Force.....	0
TOTAL	94

3. The following advanced education is in progress at the time of this report:

a. Joint Postgraduate Course for Radiological Defense Engineers - A pilot group of 14 officers (3 Army, 7 Navy, 4 Air Force) has completed the first of three years at U. S. Naval Postgraduate School and has commenced study at the University of California. Eleven Army, 11 Navy, 8 Air Force, 1 Coast Guard and 2 US Public Health Service officers have been nominated or enrolled for this course to commence July 1948. Permanent production rate of this course is expected to be 40 officers (joint services) per year.

b. Four Army, 0 Navy, 10 Air Force, 2 USPHS medical officers have completed a six months' radiological medical course at the University of Chicago. Approximately nine medical officers are being nominated for corresponding medical courses under the AEC fellowship program to commence the academic year 1948. Nine Army, 0 Navy, 0 Air Force medical officers have completed corresponding on-the-job training in AEC installations. Production rate of education in the medical phase at this level will vary, averaging an expected and approximate figure of 10 per year.

4. General

Directives effecting internal organization have been issued by the Navy for organization and training which at the present time are being implemented.

[redacted]

[redacted]

III. CONCLUSIONS

It is CONCLUDED:

A. That a Radiological Defense Training program should be conducted at three distinct levels, namely indoctrination, technical training and advanced education.

B. That training in medical aspects should closely parallel training in military line aspects.

C. That within the services programs of indoctrination should be continued and extended. These should be administered by each service, utilizing its full capabilities and all media for the dissemination of this indoctrination; parallel indoctrination to include basic medical aspects should be similarly conducted in the medical departments of the services.

D. That the Armed Forces Special Weapons Project should prepare a joint radiological defense motion picture series for promulgation and distribution by the armed services.

E. That the technical training of Radiological Defense officers should continue on a joint basis in the schools now established at Treasure Island, Army Chemical Center and the School planned at Keesler Field. The output of these schools should be increased as necessary to meet service requirements.

F. That courses should be established by each of the services to train Assistant Radiological Defense Officers (See paragraph II B. 1. b. Supra) in an abbreviated practical course standardized by AFSWP as to curriculum requirements but not limited as to geographical location or joint personnel. This training is necessary in order that a considerably increased number of technically trained officers will become available.

G. That courses should be established by each of the services to train Radiological Defense NCO's and enlisted monitors in quantity with a practical course standardized by AFSWP as to minimum curriculum requirements, but not limited necessarily as to location or joint personnel. This training may be conducted in schools or in the field, according to the needs of the particular service.

[redacted]

H. That all schools and training within the services concerned with radio, radar and other electronics maintenance should include within their curricula or training, the maintenance, repair, and calibration of radiac instruments.

I. That all medical department officers should be trained in the medical aspects of radiological defense in a course consuming approximately two weeks' classroom time.

J. That all service schools conducting training of medical and dental laboratory technicians should institute training in radiological laboratory procedures and photodosimetry standardized by AFSWP as to minimum curriculum requirements.

K. That coincident training in the reserve components of the armed services should be instituted in all of the above specialties during active duty periods and in organized reserve and National Guard units to the fullest extent that reserve officers and enlisted personnel become available for duty. This training should be conducted on the basis of the same curricula or abbreviated curriculum similarly standardized by the AFSWP. Joint participation in class groups should be continued for reserve component officers at the Radiological Defense officers training level.

L. That radiological defense training of the national public should be a responsibility of the Director of Civil Defense.

M. That the AFSWP should be prepared to assist in providing the Civil Defense organization with instructors, training techniques, devices and information as may be required.

N. That a requirement exists for a limited number of highly educated military personnel for advising and planning duties on the staffs of some commands and that the joint postgraduate Radiological Defense Engineers' course as now established should be continued.

O. That medical officers for advisory service on the staffs of senior commands are necessary and that the courses in medical aspects of radiological defense recently conducted at the University of Chicago and planned for the AEC medical fellowship training program, should continue as the fundamental curriculum on which to base the training of these medical officers.

P. That advanced training by the services of reserve component officers is impracticable.

[redacted]

[redacted]

Q. That in Civil Defense, civilian scientists and medical personnel are available in sufficient numbers to serve as the counter part of the Radiological Defense Engineer in the service.

R. That, the policy of assigning according to the requirements indicated, a number of graduates of any particular course as instructors in a course at the next lower level is a practical and workable plan. No special training for specific instructor duties is indicated.

S. That a Radiological Defense Training panel be instituted under the auspices of the AFSWP to continue coordination of the Radiological Defense training of the armed services. Membership should be essentially that of the present Schools Subcommittee of the JRSTC.

IV. RECOMMENDATIONS:

It is RECOMMENDED:

A. That the foregoing conclusions be included in the final report of the JRSTC to the Joint Chiefs of Staff as the training to be conducted in radiological defense within the Armed Forces.

B. That with the approval of this report, the Schools Subcommittee of the JRSTC be dissolved.

Signatures

Tyson
Smith Rundell Anderson
Saville
Cox Houghton Wahnsley

[redacted]

TAB "A"

CURRICULUM FOR RADIOLOGICAL DEFENSE OFFICERS COURSE

Total of Classroom Hours

	No. of Hours
Administrative (Including Orientation, Security, Examinations, Physical Examinations, and Graduation)	52
Chemistry	3
Decontamination	3
Defense Operational Problems	11
Electricity	11
Explosion Phenomena	7
Indoctrination Programs	6
Laboratory	19
Mathematics	4
Medical	8
Meteorology	3
Monitoring and Survey	37
Physics	31
Scientific Visits	7
Discussion, Reviews, Critiques and Supervised Study	42
TOTAL	244

TAB "B"

CURRICULUM FOR TWO WEEKS RADIOLOGICAL DEFENSE MONITORING

FOR

ENLISTED PERSONNEL

	No. of Hours
Theory	16
Administration	5
Motion Pictures	3
Examinations	2
Practical Work	30
Student Participation	14
TOTAL	70

CURRICULUM FOR RESERVE OFFICERS RADIOLOGICAL DEFENSE COURSE

Total of Classroom Hours

	No. of Hours
Area Damage Control (Defense & Protection Problems)	12
Explosion Phenomena and Fall-out	9
Nuclear Physics	11
Practical Monitoring and Survey	16
Reviews, Examinations and Critiques	9
Theory and Use of Instruments	11
Administrative	13
TOTAL	80

[redacted]

TAB "D"

CURRICULUM FOR RADIOLOGICAL DEFENSE ENGINEERS

Total of Classroom Hours

		No. of Hours
	First Year - Naval Postgraduate School	
Differential & Integral Calculus - To be given as Correspondence Course		
	Summer Term	
Ma 102	Ord. Diff. Equations & Series	5
Ph	Optics, Atomic Structure and Origin of Spectra	6
Ch 102	General Inorganic & Analytical Chem	8
	Meterology, Elementary (Air & Ocean)	3
		22
	Fall Term	
Ma 103	Functions of Several Variables and Vector Analysis	6
Ph	Electricity and Magnetism	6
Ph	Electronics	3
CH	Organic Chemistry	6
		21
	Winter Term	
Ma 104	Advanced Calculus & Probability	4
Ph	Dynamics	4
Ph	X-Ray, Radioactivity and Nuclear Disintegration	6
Ch 441	Physical Chemistry	8
		22
	Spring Term	
	Special Math. - Prep. for Theoretical Physics	4
Ph	Kinetic Theory	3
Ph	Electronic & Radiation Measurements	5
	Properties of Small Particles	4
	Biology & Physiology	4
		20

[redacted]

Second Year - Civilian University

	Summer Term	No. of Units
Zoology 10	- General Human Biology	3
Chem. (Spec.)	- Radiation Measurements	3
	- Radiation Measurements Laboratory	3
Physiology 51-A, 51C	- General Physiology	5

	Fall Term	
Chem. 123	- Nuclear Chemistry	2
Phys. 126	- Medical Physics	1
Physiology 100B	- General & Comparative Physiology	3
Phys. 121	- Intr. to Atomic Structure	3
Phys. 110D	- Modern Physics Lab	1
Phys. 105A	- Analytical Mechanics	3
	Mathematics	3
		16

	Spring Term	
Phys. 126	- Medical Physics	3
Chem. 223	- Adv. Radioactivity	2
Med.Phys.100D	- Biological Aspects of Radiation	3
Phys. 115	- Intr. to Quantum Mechanics	2
Phys. 124	- Radioactivity & Nuclear Structures	3
Phys. 105B	- Analytical Mechanics	3
		16

Third Year

Summer Term

FIELD TRIP

Fall Term

FIELD TRIP - Hunter's Point - USN
Radiation Laboratory - Univ. of Calif.

Spring Term

Phys. 224	- Nuclear Physics	3
Phys. 290	- Seminar	1-3
Phys. 295	- Thesis	1-6

[redacted]

MEDICAL OFFICERS POSTGRADUATE COURSE - RADIATION HAZARDS

(University of Rochester)

1. Radiation Physics and Chemistry:

Topics to be covered:

a. Nuclear Physics.
b. Tracer chemistry techniques.
c. Nuclear Chemistry.
d. Properties of radioactive elements.
e. Properties of radiations.
f. Fission product chemistry.

2. Instrumentation and Monitoring:

a. Principles of radioactive measurements.
b. Basic electronics.
c. Characteristics.
d. Measurements of alpha, beta, and gamma radiation.
e. Fast and slow neutron measurements.
f. Hazards associated with process as far as chain reaction.
g. Hazards of radiation released during chain reaction.
h. Hazards from fission products.
i. Industrial plant monitoring practice.

3. Physiological Effects of Ionizing Radiations:

a. Effects of external radiation.
 (1) General cellular effects.
 (2) Special systemic effects.
 (a) Hematopoietic tissues, etc.
 (3) Genetics
b. Effects of internal and localized radiation.
 (1) Dosage measurements.
 (2) Distribution studies.
 (3) Toxicology as effected by localization.

4. Pharmacology and Toxicology:

a. Fundamental principles of toxicology:
 (1) Bioassay and theory of LD50.
 (2) Criteria of poisoning.
 (3) Detoxification and antidotes.
 (4) Tolerance and cumulative effects.
 (5) Distribution and excretion.
 (6) Enzyme inhibition and competition.
 (7) Mechanism.
 (8) Pathology of poisoning.

[redacted]

b. Toxicological methods.
 (1) Skin and eye.
 (2) Oral.
 (3) Parenteral.
 (4) Inhalation.

c. Toxicology.
 (1) Heavy metals, eg. Pb, Hg, U.
 (2) Industrial solvents.
 (3) Halogens — especially fluorides.
 (4) Atomic energy elements

d. Forensic medicine.
 (1) Maximum allowable concentration.
 (2) Legal aspects of responsibility.

e. Theory of Dissemination.
 (1) Aerosols.
 (2) Comminution.
 (3) Dispersion.

f. Plant and personnel inspection
 (1) Methods of survey.
 (2) Blood and urine analysis.
 (3) Physical examination
 (4) Safety precautions.
 (5) Plant visits.

SECTION 6.

DEVELOPMENT DIVISION. ~~(AFSWP-11v)~~ (Ref. 148)

4-6-1. General.

The Development Division was another of the six original divisions of the Headquarters of the AFSWP which were authorized officially by the memorandum charter of 8 July 1947 (see par. 3-5g). This Division was originally charged with "military participation in the development of atomic weapons of all types". The charter stated further: "It may discharge this responsibility by direct participation or by exercising staff supervision. It must work in closest coordination with the Atomic Energy Commission and with all other interested agencies of the War and Navy Departments" (which later became by inference: "of the Departments of the Army, the Navy and the Air Force"); and: "It must closely follow the scientific development of atomic energy."

The Division was sometimes called the "Research and Development Division" (or the "R & D Division"), but its official name was the "Development Division".

The Division may be said to have been activated with the appointment of a Chief on 8 August 1947. The corresponding AFSWP Development Division at Sandia Base was initiated on 19 August 1947, and the staff work of the Headquarters Division ~~has been~~ was carried out in close coordination with that field division.

4-6-2. Sandia Research and Development Board.

As described in Section 2 of this chapter, a joint

Research and Development Board was established at Sandia Base about 1 March 1948. The Board was initiated by joint agreement between the Director, Sandia Laboratory, and the Commanding General, Sandia Base, with the approval and concurrence of the Director, Los Alamos Laboratory, and the Chief, AFSWP. This Board helped effectively to produce unified action toward the solution of the many problems with which the Development Division was concerned, and in combining information and facilities for the common good. It has been accepted generally as a competent, joint, working-level body. (See par. 4-2-3b(3); also, ~~App. 4,~~ Ref. 41, p. 13; ~~App. 11,~~ Ref. 148, pp. 1,2.)

4-6-3. Weapons Status Survey.

At the request of the Military Liaison Committee ~~(See 8-10C),~~ (Ref. 149), the Division made a survey of the status of development of weapons, and methods of delivery of the weapons, and a draft of a study resulting from this survey was completed in September 1948. The document which was prepared analyzed the present weapons and considered variations of present warheads as well as possible future developments, and it outlined present and future methods of delivery. As of 31 December 1948, this study was being revised in the light of comments received from Sandia Base, the Sandia Laboratory, and the Los Alamos Laboratory. ~~(See TS No. D-327)~~ (Ref. 150)

To accomplish a more detailed study along the same lines, a project was initiated, and roughly drafted at a meeting at Sandia Base on 1 September 1948, for the work to be performed by Project RAND. The Military Liaison Committee approved informally, in December 1948,

the general arrangements contemplated, and forwarded a proposal to the AEC for approval. As of 31 December 1948, this approval was still pending. (Ref 148, ~~(See App. II,~~ p.2, par. 2; p.4, par. 13.)

4-6-4. Improvements and Tests.

a. Ballistics and Aerodynamics.

Early in 1948 it was apparent that neither the 1561 bomb nor the MK-IV bomb had good ballistic characteristics and that little; if any, progress was being made toward improvement. In January 1948, the Chief of the Sandia Development Division attempted to arrange a visit to Sandia Laboratory by several leading aerodynamicists and other experts of Project RAND; security difficulties, however, prevented the visit at that time. Later in 1948, the Chief and Deputy Chief of the Headquarters Development Division, during a meeting with the Director of Sandia Laboratory, proposed that a group of expert dynamicists, who had meanwhile been granted "Q" clearances, might be consulted in connection with design problems on the MK-IV tail. Mr. Paul J. Larsen, the Director, agreed after some discussion, and arrangements were made through the Air Force for attendance of six of the nation's leading aerodynamicists. In addition, experts from Aberdeen Proving Ground and from the Naval Ordnance Test Station, Inyokern, California, were invited by the Sandia Laboratory.

The meeting was held on 24 May 1948 and resulted in the formation of a comprehensive test program, including both wind tunnel and drop tests, aimed at an early solution of the difficulties. The meeting clearly demonstrated the inadequacy of the Sandia Laboratory

staff and facilities engaged on the problem, and indicated that little real progress had been made on the problem during the previous two years. Aggressive following through of the proposed program by the Sandia Laboratory resulted in immediate improvement. At the end of the year 1948, it appeared that a basic configuration recommended by the aerodynamicists, modified considerably by the laboratory, gave good ballistic properties to the MK-IV bomb.

b. Weapon Components, etc.

The Sandia Research and Development Board considered improvements in various weapon components under development by Sandia Laboratory. These included: the new MK-III X-Unit; a new MK-IV detonator; new batteries developed by the Willard Battery manufacturers; new clocks; a bench device to replace the existing "Dipsy Doodle" test of Archies; and others.

c. In-Flight Nuclear Insertion.

In-flight nuclear insertion was considered absolutely imperative. As a result of a proposal by the Chief of the Sandia Development Division, and unrehearsed test of an extraction and insertion, in a plane on the ground, using a standard B-29 plane and a MK-IV bomb, was tried and accomplished, on 25 March 1948, without any special tools or equipment. A proposal for an AEC study of redesign of the MK-IV gadget to facilitate this in-flight nuclear insertion was forwarded through the Military Liaison Committee on 7 April 1948. (Ref. 151) ~~(See B-3, 9 July 1948.)~~

In accordance with a recommendation of the Chief of the Sandia Development Division, an Air Force officer having some background

[redacted]

in tool design was sent to Los Alamos in the fall of 1948 to work out procedures and tools to accomplish the in-flight insertion and extraction.

d. Low Temperature Tests.

As a result of request from the services and from AFSWP, a program to test the bomb components for serviceability at low temperatures was underway at Los Alamos and at Sandia Laboratory at the end of the year 1948. Positive information was desired on the ability of the bomb - complete - to withstand extreme temperatures. If any part failed to stand up, or if many components failed this test, it was planned that a method would be developed for heating the bomb in flight, either with an electric blanket or with space heaters in the plane bomb bay.

e. Chickenpox Test.

The Development Division and the Operations and Training Division participated with the Air Force and the AEC in the development of "Chickenpox", which was an airborne assembly laboratory installed in a converted C-97 plane. (See par. 4-3-5c.) The Development Division participated also in the testing of this aircraft. It was cold-tested in the laboratory at Eglin Field, Florida, in July 1948, and accepted; it was then field-tested at Sandia Base (27 July 1948), accepted there, and made an item of standard usage. Kits for converting the C-97 aircraft to Chickenpox status were approved for standardization and stock pile.

4-6-5. Program for Emergency Procedures.

A comprehensive testing plan to determine emergency

[redacted]

procedures in the event of mishap on take-off, ditching or crash landing, or an abortive mission, was received from the Air Force (dated 30 January 1948) and forwarded to the Military Liaison Committee for approval 29 March 1948 (Ref. 152). At the end of 1948, all three services were preparing detailed plans and requirements for this program, for integration into a complete, detailed plan for final approval by the Military Liaison Committee. It was proposed that the final plan would list the required tests, the quantities of supplies that would be requested of the AEC, the costs and the shares of costs by the services, and the distribution of the tests to the services. The program was to be coordinated by the AFSWP.

4-6-6. Protective Construction Committee.

The Development Division organized a Protective Construction Committee, composed of members of all interested subdivisions of the services. This committee was to study the probable results of atomic warfare on military equipment and installations, to determine whether any changes in existing specifications were necessary. The committee met several times in May and June 1948. It planned to overlap somewhat the field of investigation into non-atomic warfare, in order to evolve a formula for collective protection. This formula could then be used by other staff agencies to determine the advisability of consideration for protection of manufacturing plants, civilian activities, etc.

In this connection, the Division has handled some inquiries from the public, regarding protection from atomic bombs; for example: one inquiry was concerned with construction information and

advice for a relatively large bomb-proof shelter for the Chicago Tribune newspaper; another involved a shelter for a publishing house in Washington, D. C.

4-6-7. Weaponeer Training Kits.

The Division, in conjunction with the Sandia Research and Development Board, participated in the development of a weaponeer training kit for using organizations. Six kits were delivered to Sandia Laboratory for test, 26 July 1948, and production items were expected early in 1949.

4-6-8. Parachute or Drogue for Jettisoning Bomb.

The provision of a parachute or drogue for jettisoning a bomb was suggested by the Air Force Tactical and Technical Committee (later, the Air Force Field Office for Atomic Energy, Kirtland Field), and recommended to the Air Force by the AFSWP. At the end of 1948, an Air Force study for this development was underway by the Air Materiel Command at Wright Field.

4-6-9. Vulnerability of Free-Falling Bomb.

On 29 December 1947, the Development Division initiated a study of the vulnerability of a free-falling bomb, consulting many service reports. The study was carried out by Board No. 4, Army Ground Forces, which concluded, on 25 February 1948, that the probability of detonating a free-falling bomb by anti-aircraft fire was rather remote.

4-6-10. Underground Explosion Tests.

The Division planned to participate in the underground

explosion tests which were to be carried out in the latter part of 1948 by the Office of the Chief of Engineers, U. S. Army, to the extent of planning and financing the tagging of the earth near the explosives, and the analysis of its final distribution, in an effort to gain information which might be useful in predicting residual radioactivity following the possible underground detonation of an atomic bomb. This test program was postponed by the Engineers on 21 October 1948, because of lack of funds, but before the postponement a number of test shots were made, using willemite (a zinc orthosilicate) ore furnished by the AFSWP as a fluorescent tagging material. The results were good, indicating that the Zn_2SiO_4 was a satisfactory tracer material for such tests, making possible both a rapid check of distribution on the ground and a more thorough study by the analysis of collected dust samples. It was proposed that the AFSWP participation would continue when this testing program should be reactivated.

4-6-11. LB Type Bomb - Practice Design.

On 7 October 1948, Army Ordnance was requested by the Development Division to undertake a project for the design and test of a practice Little Boy (or Gun) Type bomb. This project was underway at the end of the year 1948. A study was being made to determine the feasibility of altering the M-107A (practice replica of the 1561) by a change in the rear section to approximate the MK-IV bomb, in order to make usable some 2,200 of these bombs still in existence.

4-6-12. Light-Weight Casing for MK-IV.

At an aerodynamics conference at Los Alamos on 2-3

September 1948, it was pointed out by Mr. John K. Northrop, President of Northrop Aircraft, Inc., that a saving of perhaps one ton in the weight of the MK-IV could be made by the use of a light weight case, of aircraft type construction. This statement aroused much interest from various agencies. Action was suggested by Colonel W. M. Canterbury, USAF, Chief of the Sandia Development Division, AFSWP, in a teletype on 8 September 1948, and by Mr. Larsen in a letter on 29 September 1948 (Ref. 153).

In response to the teletype from Colonel Canterbury, the AFSWP wrote to the AEC, on 21 October 1948 (Ref. 154), ~~(see D-39),~~ indicating a military interest, requesting the development of this improvement, and recommending that a contract be let to an aircraft company. In response to Mr. Larsen's letter, the AFSWP wrote to the AEC, on 4 November 1948 (Ref. 155), ~~(see SWPDV-2-471.6),~~ indicating a vital interest and requesting that a suitable program be started. Brigadier General James McCormack, Jr., Director of the Division of Military Application, AEC, requested, by letter dated 16 November 1948 (Ref. 156), ~~(see G-614)~~ that Los Alamos and Sandia Base initiate a program for the design and manufacture of test quantities of prototype light cases for the MK-IV. ~~Its~~ He specified continuous consultations with the AFSWP, with disagreements to be referred to General McCormack.

4-6-13. New Fusing System.

Before the end of the year 1948, preliminary steps had been initiated toward the invention of a new fusing system, to replace the existing Archie-clock-baro, etc., combination. The Air Force was requested, on 2 November 1948, to get in touch with a group of experts capable of examining the problem and making recommendations. As of

31 December 1948, decision had not yet been made as to whether this program should be pushed.

4-6-14. Difficulties and Handicaps.

Because of the nature of its primary mission, "military participation in the development of atomic weapons of all types", the Development Division of the AFSWP has probably suffered more acutely than any other division from the confused situation in which the development of atomic weapons has been placed ~~than any other Division~~; perhaps, indeed, more than any other unit of the armed services. This confused situation, whereby one Government agency (the Atomic Energy Commission) has been delegated the authority and responsibility to develop atomic weapons, while the responsibility for their use, and for the preparation for their use, remains in the hands of other agencies (the armed services) has resulted from enactments by the Congress, as described in the first chapter of this History. (See par. 1-2c(4).)

The agency of the Atomic Energy Commission charged with the responsibility for weapons development was the Sandia Laboratory; although the establishment of the Sandia Research and Development Board (see par. 4-6-2) helped immeasurably in obtaining effective action on problems relating to the official mission of the Development Division, the efforts of the Division were still seriously handicapped simply because it had no authority over the Laboratory or its personnel. The Division had to stand idly by, although it was thoroughly aware of defects which could have been cured.

An appraisal of the situation by the Chief of the Development Division, made at the end of the year 1948, contained the following

list of "contributing factors" to the "very unsatisfactory condition" of "this most important field of development":

a. "Confusion in the Military Establishment resulting in lack of a coordinated military requirement";

b. "Apparent lack of firm direction from the AEC" (in this connection, principally to the Sandia Laboratory);

c. "Organizational and functional intertwining of research, development, and production activities within the AEC";

d. "General inadequacy of staff and facilities at Sandia Laboratory. It is alarming to consider that the facilities and experience level available to weapon development (as distinct from warhead) are inferior to that being applied to other developments of far less importance";

e. "Failure of Sandia Laboratory to sufficiently utilize outside facilities and experience, both civil and military. The laboratory has attempted tasks beyond its capabilities with resultant loss of time, money and effort. Correlated with this has been a failure to keep informed on developments in related fields";

f. "Over emphasis on security in many instances";

g. "General lack of appreciation among AEC personnel of the military implications and importance of various aspects of their work, and of military needs";

h. "...the paucity of authoritative information and the lack of any straightforward means of keeping informed. There has been little disposition on the part of the AEC to make an effort to inform AFSWP regarding weapon development. The tendency has been to regard briefings,

[redacted]

joint sessions, and reports to MLC as sufficient. The commission has steadfastly refused to transmit as a routine matter any classified documents in which the Development Division ~~wants~~ feels particularly interested". (Ref. 148, ~~App. 11,~~ pp. 6,7,8; also, Ref. 41, ~~App. 4,~~ pp. 42,43.)

(Note: It is believed that the fore-going criticisms, which have been formally made, are properly a part of the History of this period and should be recorded herein; as a matter of policy, however, it may be found desirable to delete them. This deserves careful consideration. The same question applies to portions of the paragraphs which follow.)

Although the Development Division has had to stand idly by insofar as correction of defects within the organization of the AEC is concerned, the Division and the AFSWP itself have done what they could to improve the situation in general, within the limitations of their authority, short of formal appeal as provided for in the Atomic Energy Act of 1946. Near the end of 1948, particular consideration was given to the problem of providing a procedure whereby the Military Establishment could present specifications - technical and physical characteristics of secondary importance - applicable to the atomic weapons and related equipment. This problem was taken up with the Military Application Division of the AEC, with the recommendation that the Director of that Division send a representative to Sandia, with authority to speak for the Director, and charged with responsibility for seeing that military specifications are met. The Director of the Military Application Division decided to send a representative to each meeting of the Sandia Research and Development Board as an observer only.

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4-6-15. Liaison With Other Agencies.

a. Sandia and Los Alamos Laboratories.

The difficulties described in the preceding paragraph inevitably affected the relations between the personnel of the Development Division and the personnel of the Laboratories.

At the end of the year 1948, relations with the Sandia Laboratory personnel had improved considerably but were still somewhat short of ideal. The same was true, to a lesser degree with regard to relations with the Los Alamos Laboratory personnel. (Ref. 143, ~~(See App. II,~~ p. 7.)

The Division made efforts better to acquaint Sandia Laboratory personnel with the nature and capabilities of the various service laboratories, proving grounds, and manufacturing facilities. These efforts included arrangement of visits by the Laboratory personnel to several installations in the Washington area, and the transmission of miscellaneous data to the Laboratory.

b. Atomic Energy Commission.

Contacts with the personnel of the AEC in Washington were usually good at the working level, while contact at the high level was usually very slow and tedious, as noted in an earlier section of this chapter (see par. 4-2-2 b). At the end of the year considerable improvement was expected from developments within the AEC by which the Director of the Military Application Division was given much broader powers, and from possible improvement of liaison between that Director and the Sandia Laboratory.

c. Military Liaison Committee.

Relations of the Division with the Military Liaison Committee

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were close and usually very good. The changes within the Committee during mid-1948 appeared to facilitate good relations.

d. Armed Services.

Very good relations have been maintained between the Development Division and the various agencies of the Army, the Navy, and the Air Force. These agencies have included particularly:

(1) The Research and Development Group of the Logistics Division of the General Staff, U. S. Army; also, the various Army services.

(2) The Atomic Energy Division, Op-36, U. S. Navy; also, other Naval installations, including: the Naval Gun Factory; the Naval Ordnance Test Station, Inyokern; and the Naval Research Laboratory.

(3) The Special Weapons Group of the Deputy Chief of Staff, Materiel, U. S. Air Force; also, other Air Force installations, including Wright Field.

4-6-16. Organization and Personnel.

The original charter of the AFSWP stated, with respect to the Development Division: "It will require a Chief and Assistants from the Army, Navy and Air Forces including representatives from specially interested technical agencies of the War and Navy Departments, including interested Technical Services and Bureaus."

a. Chief and Deputy Chief.

Throughout the current period of this History, the Development Division was headed by Captain E. H. Eckelmeyer, U.S.N.

From 14 July 1947 , Colonel A. W. Nielsen, USAF, served as Deputy Chief of the Division.

b. Organization.

As of 31 December 1948, the Division consisted of five officers (3 Army, 1 Navy, and 1 Air Force) and one civilian secretary.

c. Sandia Base Development Division.

The Sandia Base Development Division was headed, from its initiation on 19 August 1947, by Col. W. M. Canterbury, USAF, and its organization as of 31 December 1948 was composed of eleven officers (1 Army, 2 Navy, and 8 Air Force), two enlisted men, and two civilian secretaries.

SECTION 7.

CROSSROADS DIVISION. (Ref. 157)

4-7-1. General.

The Crossroads Division of the AFSWP was established for the purpose of completing the "unfinished business" of the Joint Crossroads Committee and Joint Task Force One - concerned with the atomic bomb tests at Bikini Atoll in July 1946, which constituted the major mission of Operation Crossroads.

The participation of the Manhattan District and its personnel in Operation Crossroads has been described in the Manhattan District History, Book VIII, Vol. 3, Chapter 8. An official unclassified report of the Operation was published in 1947: "Bombs at Bikini, the Official Report of Operation Crossroads, Prepared under the Direction of the Commander of Joint Task Force One", by W. A. Shurcliff, Historian of Joint Task Force One, Wm. H. Wise & Co., Inc., New York. An official unclassified report was issued to the Joint Chiefs of Staff by the Commander of Joint Task Force One, 18 November 1946: "Technical Report of Operation Crossroads"; this report was compiled also by Dr. W. A. Shurcliff. (Ref. 158, 159)

Joint Task Force One was dissolved on 1 November 1946, by the Joint Chiefs of Staff. Thereafter, the final activities of the Operation were carried on by the Joint Crossroads Committee, of which Rear Admiral W. S. Parsons was Chairman (see "Bombs at Bikini", P. 172), until, on 10 June 1947, the residual functions were transferred to the AFSWP (Ref. 160). The Crossroads Division was activated on that date. This action occurred after General Groves had sent his memorandum to the Chief of Staff, U. S. Army, and the Chief of Naval Operations, dated 4 April 1947, which became the basis of the memorandum charter of 8 July 1947 (see par. 2-3). Therefore, there was no provision in either of these

documents for a Crossroads Division. As a matter of fact, this Division may be regarded as a temporary division from the very beginning; at first, its duties were numerous and arduous, but later, after it became primarily a custodian of records, its division status was cancelled and its personnel and functions were transferred to the Radiological Defense Division, on 22 December 1948 (see Section 5 of this chapter).

The original mission of the Crossroads Division was to complete the publication and distribution of technical and scientific reports and photography of Operation Crossroads, to agencies of the armed forces, the disposal of surplus material, and the disposition of administrative files.

A similar mission was delegated to the Crossroads Division with respect to Operation Sandstone, concerned with the new weapons tests which were carried out at Eniwetok in the spring of 1948, by Joint Task Force Seven, in cooperation with the Atomic Energy Commission.

On 20 April 1948, the Joint Chiefs of Staff designated the AFSWP as the repository for the histories, operational and special reports, and certain administrative records, of Joint Task Force Seven, upon the future dissolution of that Task Force (Ref. 161). AFSWP Administrative Memorandum No. 11, dated 20 May 1948, designated the Crossroads Division as the division to which the residual functions relating to Operation Sandstone were delegated. On 16 June 1948, the Joint Chiefs of Staff approved the inactivation of Joint Task Force Seven and charged the AFSWP with the responsibility for all residual military activities of JTF7 (Ref. 162). Thereafter, the mission of the Crossroads Division related to the reports, photography, surplus material, administrative files, etc., of Operation Sandstone in the same way as it already related to the corresponding items of Operation Crossroads.

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4-7-2. Principal Activities.

The principal activities of the Crossroads Division may be described as follows:

a. Resurvey at Bikini Atoll.

A Joint Chiefs of Staff Memorandum, dated 16 May 1947, signed by Admiral W. D. Leahy, was addressed to the Secretary of the Navy and the Secretary of War, and requested that a scientific resurvey be conducted at Bikini Atoll (Ref. 163). On 2 June 1947, the Chief of Naval Operations directed the Commander in Chief, Pacific Fleet, to assume operational control of a Task Group to conduct the resurvey (Ref. 164). The technical and scientific aspects of this project were placed under the direction of the AFSWP, with Captain Christian L. Engleman, USN, as Project Officer, and Dr. E. S. Gilfillan, Jr., as Technical Director.

The Task Group arrived at Bikini Atoll on 15 July 1947, just 355 days after Test B of Operation Crossroads. The survey was conducted from that date until 29 August 1947, when the Group started home. The investigations undertaken consisted principally of the following items:

(1) The amount and nature of radioactivity remaining in the lagoon water and on the reef and land structures of the atoll, wherever it exceeded normal levels of radioactivity and cosmic rays.

(2) The concentration and kind of radioactive materials in plants and animals of the area, and the effects of radioactivity upon such organisms.

(3) Physiological, geological, and oceanographic studies of organisms and reef-building processes, including the drilling of

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cores down to 1,000 to 2,500 feet.

(4) Detailed observations (including photographic recording) of the following ships which were sunk as a result of Test B: Saratoga (CV-3), Pilotfish (SS-386) and Apogon (SS-308). (Some observations were also made on the Japanese battleship Nagato, but the time available did not permit obtaining comprehensive information of this ship.)

(Two other items were included in the mission of the resurvey, as originally proposed: to recover from the wreck of the Nagato four instruments, which were believed to be possibly in good condition still, and to locate, if possible, a section of the LSM-60, directly under which the bomb of Test B of Operation Crossroads had been detonated. The former of these two items was eliminated as being impracticable, especially in view of a recommendation by the Chief of the Bureau of Ordnance, USN, that it be abandoned; the latter item could not be fulfilled.)

The wide variety of equipment used by the Resurvey Task Group, to obtain information and records from their investigations, not only included core-drilling equipment, diving equipment, still and moving picture cameras, as well as numerous radiological and other scientific instruments, but also included an experimental underwater television unit, which was used for the first time at depths between 100 ft. and 200 ft. This unit was developed and operated, under contract, by the Cornell Aeronautical Laboratory. Although it was found that the television equipment did not constitute a material aid to the diving operations during the Bikini resurvey, it proved to be technically feasible and was considered highly desirable for many maritime uses.

The experimental trials developed a number of recommendations for possible future improvements.

From the scientific standpoint, it was the opinion of the Technical Director that "the principal result of the Bikini Scientific Resurvey was to show that the atomic explosions caused only minor, transient disturbance to the plant and animal populations of the area, the effects of which have almost completely disappeared after one year's time."

Voluminous data were collected during the resurvey and brought back to the United States for study and analysis. A Technical Report on the results was written under the direction of the Project Officer and the Technical Director, and was published by the AFSWP in December 1947. (See Technical Report, "Bikini Scientific Resurvey"; Vol. I, Operations; Vol. II, Report of the Technical Director, with Annex IV; Vol. III, Report of the Director of Ship Material, with Annex I, II and III;) (Ref. 165.)

b. Crossroads Reports.

(1) Completion.

During the year 1947, final Crossroads Reports prepared by the Director of Ship Material Organization, the Operational Report, the Technical Report of Operation Crossroads, and the Report of the Technical Director were completed and printed. (Ref. 166.) At the end of 1948, final reports were still pending from the Bureau of Medicine and Surgery Research Group and from the Physical Measurements Group.

(2) Distribution.

A basic allowance list was authorized, by JCS 1552/96,

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(Ref. 167), [redacted]

dated 17 June 1948, for distribution of some 157 separate Crossroads reports to 113 agencies of the armed forces. By the end of 1948 the Division had virtually completed this distribution, involving approximately 15,000 volumes of reports.

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c. Joint Task Force Seven Reports.

On 18 June 1948, the AFSWP was authorized (by JCS Memorandum SM-10318, Ref. 168) to make distribution, of the Report of the Commander of Joint Task Force Seven to the Joint Chiefs of Staff, to various agencies of the armed forces. The distribution made included the Technical Report of the Communications and Electronics Section of the Special Staff of Joint Task Force Seven. At the end of the year, a considerable number of technical and scientific reports, including a number of motion pictures, were yet to be received from the Atomic Energy Commission. After receipt, this material would have to be reproduced and distributed to interested agencies of the armed services.

d. Film Library.

An AFSWP Film Library was established in the Pentagon Building in July 1948, for storing approximately 1,000,000 ft. of motion picture film and 200,000 still photographs. The task of distribution, indexing and cataloguing this material continued throughout the balance of the current period of this History. Until July 1948, the Crossroads Division had used the facilities of the Naval Photographic Center at Anacostia, Maryland.

e. Motion Picture "Atomic Explosion".

A documentary motion picture entitled "Atomic Explosion", classified Top Secret, was completed in July 1948. The viewing time of this picture is 3 hours and 45 minutes. Footage for this picture was obtained from: various sources in the armed services; various other Government agencies (including the Department of State, the Department of Agriculture and the Atomic Energy Commission); the British Commonwealth Scientific Office; and various commercial organizations (including March of Time, RKO-Pathe,

Paramount, MGM, Movietone News, Warner Brothers, and Phillips Export Corporation). It is of interest to note that this is the second longest motion picture ever made in the history of the motion picture industry - second only to "Gone With The Wind".

f. Vault and Technical Library.

In February 1948, a vault was installed in the office of the Crossroads Division and a technical library was established for storing technical and scientific data. The task of distribution, indexing and cataloguing these data continued throughout the balance of the current period of this History.

4-7-3. Liaison.

The functions of the Crossroads Division required close liaison with: the Atomic Energy Commission; Joint Security Control, Joint Chiefs of Staff; the Military Liaison Committee; and the various technical services of the armed forces. Liaison was also maintained, to a limited degree, with: the Federal Bureau of Investigation; the Office of Naval Intelligence; and the Military Intelligence Service.

Within the AFSWP, close relations were maintained principally with the Security Division.

4-7-4. Organization and Personnel.

The personnel of the Crossroads Division included a number of officers and enlisted men who had taken part in Operation Crossroads; it included also personnel who took part in the resurvey of Bikini Atoll; and it had assigned to it for temporary additional duty a number of officers who were engaged in the completion of reports and served in an advisory capacity on technical matters.

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a. Chiefs of Division.

The Chief of the Crossroads Division, from 10 June 1947 to 22 September 1948, was Captain Harry R. Carson, Jr., USN. From 22 September 1948 to 11 October 1948, Lt. Cdr. R. L. Reaser, USNR, the Deputy Chief, served as Acting Chief of the Division; from 11 October 1948 to 22 December 1948, Major John B. Gulley, USA, was the Chief.

b. Resurvey Personnel.

The Bikini Resurvey Project Officer, from 10 June 1947 to 12 September 1947, was Captain C. L. Engleman, USN. The personnel assigned to or attached to the Crossroads Division who took part in the resurvey totaled 314, composed of 64 officers (6 Army and 58 Navy), 184 enlisted men (1 Army and 183 Navy) and 66 civilians.

c. Photographic Branch.

Major (then Captain) C. I. Gillett, USA, headed the Photographic Branch of the Crossroads Division throughout the current period, operating first at the Naval Photographic Center at Anacostia and later, from July 1948, in the Pentagon, (Room 1D245).

Lt. Cmdr. J. D. Roche, USNR, served as Film Projects Supervisor throughout the period. He was in charge of film production, including production of the documentary motion picture, "Atomic Explosion".

d. Officers Temporarily Assigned.

The officers who were temporarily assigned to the Crossroads Division for the completion of reports and for advisory duty included:

Rear Adm. T. A. Solberg, USN

Colonel C. H. M. Roberts, USA

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[redacted]

Capt. Oscar Schneider, MC, USN

Cdr. R. M. Langer, USNR

Cdr. R. H. Lee, MC, USN

Cdr. J. M. Waters, USN

e. Total Personnel.

At the start of its activities in June 1947, the personnel assigned to the Crossroads Division totalled 50, composed of 16 officers (4 Army and 12 Navy) and 34 enlisted men (9 Army and 25 Navy) - all service personnel, with no civilians.

When the Division was dissolved, on 22 December 1948, its personnel (exclusive of those temporarily assigned) numbered ~~15~~ 12, comprised of: ~~4~~ 3 officers (2 Army and ~~2~~ 1 Navy), and ~~9~~ 7 Navy enlisted men, and 2 civilians.

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SECTION 8.

SPECIAL PROJECTS DIVISION. ~~(APP. 13)~~ (Ref. 169)

4-8-1. General.

The Special Projects Division was established by administrative Memorandum No. 16, Headquarters, AFSWP, dated 25 June 1948, (Ref. 170). Its responsibilities were therein described as follows:

"a. Preparation of plans of a long-range nature, and of certain special studies, as distinguished from problems affecting current operations and matters which are properly functions of the other divisions of the headquarters staff.

"b. Primary responsibility for relationships between Armed Forces Special Weapons Project and the Military Liaison Committee to the Atomic Energy Commission.

"c. Keeping informed of activities affecting the relationships of Armed Forces Special Weapons Project and other agencies in the atomic energy field."

4-8-2. NME Organization for Atomic Energy.

The Subcommittee on Organization, of the Military Liaison Committee, appointed a panel, on 7 July 1948, for the purpose of analyzing the National Military Establishment's existing organization for atomic energy and its responsibility and mission. (See Memorandum of MLC Subcommittee on Organization, signed by Maj. Gen. D. M. Schlatter, Chairman, 7 July 1948, Ref. 171.) Appointed to this panel were: Colonel G. Y. Jumper, USAF, Chairman; Commander C. B. Martell, USN; Lt. Colonel D. B. Parker, USA;

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and also the Chief of the Special Projects Division, Lt. Colonel J. B. Lampert, USA.

This panel began work on 13 July 1948, and its first report was considered by the MLC Subcommittee on 23 July 1948 (Ref. 172). For the Government agencies listed below, the report gave the overall authority, mission, duties, and organization, and the specific activities and procedures, insofar as they concerned the Atomic Energy Program in the NME:

Committee on the National Security Organization of the Commission on Organization of the Executive Branch

National Security Council

National Security Resources Board

Central Intelligence Agency

Office of the Secretary of Defense

War Council

Military Liaison Committee

Committee on Atomic Energy of the Research and Development Board

Munitions Board

Joint Chiefs of Staff

Office of the Deputy Director for Atomic Energy, Plans and Operations Division, U. S. Army General Staff

Atomic Energy Branch, Research and Development Group, Logistics Division, U. S. Army General Staff

Atomic Energy Clearance Section, Control Branch, Operations Group, Plans and Operations Division, U. S. Army General Staff

[redacted]

Special Projects Division, Office of the Surgeon General

Department of the Navy, Office of the Director of Atomic Defense

United States Air Force

Armed Forces Special Weapons Project

4-8-3. Dissemination of Atomic Energy Information.

At the request of the Military Liaison Committee, a study was initiated on 28 July 1948, of the problem of dissemination of information on atomic energy within the National Military Establishment. (See Memorandum from MLC to the Chief, AFSWP, 13 July 1948, subject: "Program for Dissemination of Information on Atomic Energy"; Ref. 173.) The purpose of this study was to determine the adequacy and effectiveness of existing procedures, and the need for changes and additions, to provide atomic energy information to those persons who need it.

Drafts of a report on this study were coordinated with: the armed services; the AEC; the Research and Development Board; the Office of Civil Defense Planning; the Military Liaison Committee; and all AFSWP Division Chiefs. As of 31 December 1948, the final draft had been completed and submitted to the Chief and the Chiefs of Staff, AFSWP, for review and comment before submission to the Military Liaison Committee as an agenda item. (Ref. 174.)

4-8-4. Radiological Warfare.

a. CAE Agenda Item, 23 September 1948.

In Section 5 of this chapter, relating to the Radiological Defense Division, the establishment of the Joint Panel on Radiological Warfare, by the National Military Establishment and the Atomic Energy

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Commission, is described (see par. 4-5-6 b). The meetings of this joint panel, and its recommendations, are also described.

As the result of the recommendations contained in the Joint AEC-NME Panel Report on Radiological Warfare, 29 August 1948, the Military Liaison Committee requested the Chief, AFSWP, to draft a report for them, for presentation to the Committee on Atomic Energy of the Research and Development Board, containing the recommended policies and the action required by the National Military Establishment, with relation to the recommendations of the Joint Panel. (See Memorandum from the MLC to the Chief, AFSWP, Attn: Lt. Colonel Lampert, 8 September 1948; Ref. 175.) The Special Projects Division had started action and study on the subject of radiological warfare on 30 August 1948, on instructions from the Chief, AFSWP, and this Division, with the assistance of the Radiological Defense Division, drafted a report for the Chief, AFSWP, proposing a plan for the implementation, within the National Military Establishment, of the recommendations of the Joint Panel (Ref. 176). The Division also drafted an agenda item for the meeting of 23 September 1948 of the Committee on Atomic Energy of the Research and Development Board, subject: "Radiological Warfare". (The report of the Chief, AFSWP, became Inclosure 2 to this agenda item, 13 September 1948; Ref. 177; ~~see Special Projects Division files;~~ see also par. 4-5-6 b, in which later actions by the CAE and the RDB are described.)

b. CAE Agenda Items, 22 October and 17 December 1948.

The Special Projects Division, in cooperation with the Radiological Defense Division, prepared agenda items for the Committee on Atomic Energy, concerning radiological instrumentation and dissemination

of radiological warfare agents, and prepared recommendations on these subjects for the Chief, AFSWP. These were submitted to the CAE for consideration at its meeting on 22 October 1948 (Ref. 178.)

Similarly, an agenda item on radiological decontamination was prepared and submitted to the CAE for consideration at its meeting on 17 December 1948. (Ref. 178.)

These agenda items may be described as follows:

(1) Research and Development of Radiological Instruments (meeting of 22 October 1948)

The history of this subject was reviewed, indicating that most of the work to date had been carried out by the AEC, and (that within the NME) by the Navy Department. The Signal Corps of the Army had conducted a study of the problem but a program had been initiated only to a limited extent.

Because the Army would in the future have a large, and probably primary, interest in radiological defense, it was recommended that the Signal Corps of the Army initiate an active program in the development of radiological instruments. To implement this program it was proposed that the AFSWP transfer $500,000 from funds currently available in Fiscal Year 1949 to the Department of the Army. The development program of the Navy Department, constituting the only military progress currently being made in this field, should not be interrupted at this time. The requirements of the Air Force, insofar as they were not met by the current program of the Navy Department, should be provided for by the Army.

(2) Dissemination of Radioactive Agents (meeting of 22 October 1948)

The Committee on Atomic Energy, at the meeting of 23 September 1948, recommended that the Department of the Army be given primary responsibility for research and development of the means of dissemination of radioactive agents. At the end of the year, this recommendation was awaiting action by the Research and Development Board.

The Department of the Army had established a project, subject to general supervision by AFSWP and subsequent evaluation in the light of RDB action, to be carried on by the Chemical Corps in connection with research and development of techniques to be used in selecting and evaluating radioactive agents. The Chemical Corps proposed initially to study the use of munitions for disseminating gamma emitters.

It was recommended that, as soon as RDB had allocated responsibility as recommended by CAE, AFSWP transfer not to exceed $500,000 to the Department of the Army, to be used for research and development of the means of dissemination of radioactive agents.

(3) Radiological Decontamination (meeting of 17 December 1948)

By directive from the RDB (JRDB 88/2 14 October 47) the AFSWP was requested to: (a) undertake a survey of the present status of the decontamination work being done by various government agencies; (b) analyze the relative efficiency of the different techniques for decontamination; and (c) report its recommendations for additional

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research and development to be initiated in this field.

The AFSWP formed a panel, consisting of representatives of BuShips, BuAer, Chemical Corps, Air Force, and the AEC, to study the decontamination problem and report its findings to the Chief, AFSWP.

Based upon the report of this panel the Chief, AFSWP, by letter of 13 December 1948, recommended that no primary responsibility in this field should be assigned to any service at this time. This letter pointed out that the Naval Radiological Defense Laboratory was the only military organization actively carrying out research in the field of radiological decontamination and that the Air Force had had experience in decontaminating aircraft as a result of weapons tests operations. The following recommendations were made by the Chief, AFSWP, for further research and development in radiological decontamination: (a) the Navy Department should continue its research program at NRDL, with increased participation by the Army and Air Force and the latter services should present their necessary research projects in this field to NRDL where their own facilities were inadequate; (b) final engineering and development of end items for radiological decontamination should be undertaken by the Chemical Corps to insure standardization for eventual use.

By letter of 24 December 1948 the CAE approved, with minor modifications, the letter of the Chief, AFSWP, of 13 December 1948.

[redacted]

c. Proposed AEC-NME Panel Meeting, 10 January 1949.

On 14 December 1948, the Special Projects Division took on the responsibility of preparing and coordinating, for the National Military Establishment, the Status Report for the proposed third meeting of the Joint AEC-NME Panel on Radiological Warfare, scheduled for 10 January 1949. As of 31 December 1948, this report was in process of preparation, jointly by the NME and the AEC. For the NME, a large share of the work was being done by Dr. H. Scoville of the Radiological Defense Division. For the AEC, the representatives were personnel of the Division of Military Application, AEC.

4-8-5. Annual Report of Secretary of Defense.

The Office of the Secretary of Defense, by memorandum to the Chief, AFSWP, 30 August 1948, requested data for the AFSWP section of the Annual Report of the Secretary of Defense. These data were prepared by the Special Projects Division. (Ref. 38.)

4-8-6. Future Storage Requirements.

Action started on 15 December 1948, on a joint study by the NME and the AEC of future storage requirements for atomic weapons.

The Chief of the Special Projects Division had made a preliminary review of this subject on a visit to the storage sites in September 1948. Personnel of the AFSWP and of the Division of Military Application of the AEC formulated plans in Washington, prior to conferring with appropriate personnel of the two agencies at Sandia Base.

4-8-7. Future Budget Requirements.

Preliminary and informal work with the Programming Branch of the staff of the Military Liaison Committee, on the budget for the Fiscal Year 1951, was started on 23 December 1948. This was in connection with a study by the Research and Development Board to develop the relative priority of atomic energy projects and programs within the National Military Establishment, and to estimate the funding necessary to promote the existing NME research and development, in both the offensive and the defensive portions of the atomic energy program.

4-8-8. Future Tests.

On request to the AFSWP from the Military Liaison Committee, and consequent instructions from the Chief of Staff, AFSWP, the Chief of the Special Projects Division initiated action on 24 November 1948 on planning for future atomic bomb tests (see Memorandum from MLC to Chief, AFSWP, 19 November 1948, subject: "Planning for Next A-Bomb Tests", Ref. 17). The request from the Military Liaison Committee stated that preliminary proposals should include "a list of the tests desired and sufficient discussion of each test to indicate its purpose and the information and results one expects to obtain". Comments and suggestions were requested from the appropriate Division Chiefs, Headquarters, AFSWP, and the Commanding General, Sandia Base.

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4-8-9. Miscellaneous. [redacted]

In addition to the responsibilities specifically assigned, the Special Projects Division carried out various tasks relating to the internal workings and functions of the Project. Most of these tasks stemmed from the prior service of the Division Chief in the Manhattan District, and as former Chief of the Personnel and Administration Division of the AFSWP.

4-8-10. Organization and Personnel.

The Chief of the Special Projects Division, throughout this period of its history, was Lt. Colonel J. B. Lampert, USA, designated Chief by Special Order No. 53, Headquarters, AFSWP, 2 July 1948 (Ref. 180). Colonel Lampert had previously served as Executive Officer to General Groves in the Manhattan District. He had been assigned to the AFSWP, effective 12 February 1947 (by AG Letter Order, File AGPA-G 471.6 Atomic (13 February 1947), Subject: "Confirmatory Orders", to CO, AFSWP, dated 14 February 1947). He had served as Chief, Personnel and Administration Division, AFSWP, before his appointment as Chief of this Division (see Section 10, hereinafter). Major M. N. Stanford, USA, was on duty with the Special Projects Division from 26 June 1948 throughout the balance of the current period of this History; he was designated Technical Operations Officer by oral instructions of the Chief, AFSWP, 26 June 1948, confirmed by Special Order, 23 September 1948.

The personnel of the Division, as of 31 December 1948, consisted of the two Army officers mentioned above and one civilian secretary.

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SECTION 9.

SECURITY DIVISION. ~~(AFF. 14)~~ (Ref. 181)

4-9-1. General.

a. Authorization and Activation.

The Security Division was one of the six original divisions of the Headquarters of the AFSWP authorized officially by the memorandum charter of 8 July 1947 (see par. 3-5 d). This Division was charged as follows: "The Project will be responsible for security within its own installations only. It will be responsible for proper clearances of Project personnel as required under the Atomic Energy Act. It will handle Public Relations."

The Division was activated, however, at the very beginning of the existence of the AFSWP, although at that time the Division personnel consisted of but ~~one~~ two officers. By 6 June 1947, the personnel had increased to three officers, four enlisted men, and one civilian stenographer. Shortly thereafter, the Public Relations Office, consisting of one officer and one civilian assistant, which had been a separate organization, was combined with the Division.

The Division has been frequently called, both formally and informally, the "Intelligence and Security Division", or the "I and S Division", but its official name was Security Division, throughout the current period of this History. The word "Intelligence" was probably inserted in the title by habit, carried over from the Manhattan District, wherein analogous, or partially analogous, organizations were named "Intelligence and Security". The Division had no intelligence functions, within the common definition of the term.

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b. General Functions.

In discharging its responsibilities under the AFSWP charter, the Security Division performed the following broad functions: advised the Chief of AFSWP on matters pertaining to security; provided physical security and all phases of security service for Headquarters, AFSWP; inspected, advised and assisted the field installations in all phases of security; and rendered assistance, advice and recommendations to other government agencies.

c. Routine Services.

The routine services provided by the Division at Headquarters, AFSWP, and the dates on which they were organized, or became separately organized services within the Division, ~~may be listed~~ were, as follows (the branches, sections, etc., of the Division, by which these services were administered, are described in a later paragraph):

(1) Physical Security. This service included the provision and supervision of the physical security of the AFSWP Headquarters, and its guards, the utilization of special agents assigned to the headquarters, and the administrative control of the detachment of agents for the entire project. This service was separately organized on 7 July 1947.

(2) Top Secret Control. This service included the receipt, storage, distribution and transmission of all top secret documents. It was separately organized on 16 July 1947, and one of the first steps was the collection and registration of all top secret documents then existing at the headquarters. At the same time, transmittal by officer courier became a responsibility of this service.

(3) Personnel Security. This service included the processing

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of clearances for the personnel of the AFSWP Headquarters. It was organized in August 1947. The history of the policies under which this service was operated is set forth in a later paragraph.

(4) Public Relations. This service included the maintenance of liaison with the press through the offices of the Public Information Division, Department of the Army, the furnishing of assistance in the preparation of talks by members of the AFSWP, and the maintenance of a clipping service and press file. This became a service of the Security Division on 12 August 1947.

(5) Reproduction of Classified Documents. This service included the making of classified photographic copies of various types, and the operation of a special receipt system to account for all reproductions, negatives, spoiled copies, etc. Difficulty had been experienced in having classified documents reproduced, because there was no reproduction agency in the War Department employing only cleared personnel. This service was established by the Security Division on 12 November 1947.

(6) Electrical Transmission of Messages. This service included the maintenance of security in the operation of direct TWX facilities installed in AFSWP Headquarters for transmitting, electrically, restricted data messages. During the early period of the existence of the AFSWP, there were no means available in the War Department for electrical transmission of restricted data messages, and it was necessary for all such messages to be carried by hand to the AEC for transmission; similarly, all incoming messages from Sandia Base had to be so routed. This procedure greatly handicapped rapid transmission of messages and steps were taken to obtain the necessary TWX facilities. Installation of basic equipment was completed on 22

December 1947, but transmission of classified messages could not be started until 12 March 1948, because of delay in procurement and installation of crypto equipment. (See also par. 4-10-4b.)

(7) Security Review of Documents. This service included security review of all documents submitted to AFSWP Headquarters for classification or declassification. It required very close liaison with the Atomic Energy Commission. The Security Division was made responsible for this service on 2 September 1948.

4-9-2. Personnel Clearance.

a. Early Uncertainties.

At the inception of the AFSWP, the personnel clearance procedures which were then in effect in the AEC were followed exactly. The Commission accepted all requests for investigation and granted clearances as though the AFSWP were a field office of the AEC. As the AFSWP became organized and physically separated from the offices of the Commission, considerable doubt arose as to the status of the AFSWP's clearance program - and, in fact, as to the status of clearances for the entire armed forces. The Atomic Energy Act of 1946 did not adequately define the requirements for clearance of military personnel, and a panel convened on 29 May 1947 by the Military Liaison Committee, including representatives of the Army, the Navy and the Air Force and the Atomic Energy Commission, deadlocked over the question of whether or not an investigation by the FBI was a necessary prerequisite for clearance of military personnel. Opinions written by the Adjutant General and the Attorney General held that, under the law, clearances under certain circumstances, might be granted by the military establishment upon such investigation by military

agents as might be deemed feasible. The Security Division of the AFSWP, "a small voice crying in the wilderness", steadfastly maintained that clearances granted by the AEC and based upon investigations by the FBI would be more efficient, more expeditiously processed, and more convincing.

b. Interim Security Measures.

On 2 May 1947, the Military Liaison Committee submitted to the services, with the concurrence of the AEC, a plan for interim security measures (see Memorandum to the Secretary of War, the Secretary of the Navy, and Joint Security Control, 2 May 1947, subject: "Interim Security Measures", signed by Lt. Gen. L. H. Brereton, Chairman, MLC, Ref. 182). This plan outlined recommended security procedures for the services, to be used until a permanent plan could be adopted. It authorized the use of military investigations and military clearances. This letter was promptly followed by implementing instructions by Navy Secretary Forrestal on 9 May 1947, and Secretary of War Patterson on 23 May 1947. (The Air Force was not participating in the program at this early date.) (Ref.183)

c. Clearance Policies of Secretary of Defense.

On 22 December 1947, the Secretary of Defense addressed a memorandum to the Secretaries of the Army, the Navy, and the Air Force, to the Chairman of the Research and Development Board, the Munitions Board, and the Military Liaison Committee, and to the Joint Chiefs of Staff, with the subject: "Clearance of Personnel of the National Military Establishment for Access to Atomic Energy Act 'Restricted Data'"; (Ref.184). This memorandum established the following policies:

(1) Military and civilian personnel of the National Military Establishment would be given access to restricted data only after

clearance based on a background investigation of the "same standard" as that applicable in the case of AEC employees.

(2) Background investigations required under paragraph (1) ~~(a)~~ above would be performed by the FBI in all cases where access was to be given under Section 10 (b)(5)(B)(i) of the Atomic Energy Act of 1946 - that is, where access was to be given to a contractor or prospective contractor or prospective licensee.

(3) Clearance might be granted by the appropriate branch of the National Military Establishment, except in those cases covered by paragraph (2) ~~(b)~~ above. All clearances granted by the National Military Establishment would be submitted to the AEC, together with all pertinent information, and would be subject to withdrawal upon objection by the AEC.

(4) Emergency clearances might be granted prior to completion of background investigation, but only when determined by the AEC and the NME to be in the interest of the common defense and security.

This memorandum also instructed the Military Liaison Committee to consult with the AEC and the FBI and to submit for the approval of the Secretaries of the Army, the Navy, and the Air Force detailed procedures for implementing these policies. (See Memorandum from Secretary of Defense, 22 December 1947, App. 14.)

d. Establishment of Formal Clearance Procedures.

As a result, after several trial balloons, the Military Liaison Committee, on 9 April 1948, submitted to the three Secretaries detailed procedures for implementing the policies set forth by the Secretary of Defense, as described above. These procedures were approved by the Secretary of the Navy on 1 August 1948, by the Secretary of the Army on 15 August 1948, and by the Secretary of the Air Force in September 1948. The Security Division of the

AFSWP played an active part in the formulation of these procedures. (See Memorandum MLC to the Secretaries, 9 April 1948, signed by Admiral Solberg, ~~App. 14.~~ Ref. 185.)

These procedures provided for three types of formal clearance as follows:

"Q" Clearance, described as a clearance granted by the AEC based on a background investigation performed by the FBI, required for access to restricted data under Section 10 (b)(5)(B)(i) and (ii) of the Atomic Energy Act of 1946.

"Z" Clearance, described as a clearance granted by a department or joint agency based upon a background investigation by the FBI and subject to review and disapproval by the AEC.

"M" Clearance, described as a clearance granted by a department or joint agency based upon a background investigation by a department and subject to review and disapproval by the AEC. (Procedures, p. 2.)

The procedures also established the AFSWP as a "Joint Agency", within the meaning of the term as used in these definitions. Other organizations described as joint agencies were: Research and Development Board, Munitions Board, Military Liaison Committee, and Joint Chiefs of Staff. (Proc. p. 1.)

The memorandum of 9 April 1948, transmitting these procedures (signed by Rear Admiral T. A. Solberg, Assistant Chairman, MLC) requested each department (and joint agency) to approve the procedures and promulgate appropriate implementing directives. ~~(App. 14,~~ (Ref. 181, p. 6.)

Discussions were immediately initiated between the Security

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Division, AFSWP, and the Security Division, AEC, which resulted in a letter from the AFSWP to the AEC, dated 1 May 1948, submitting for concurrence a set of proposed detailed procedures for AFSWP personnel. These detailed procedures were approved by the AEC, with minor revisions, under date of 8 June 1948. (See letter from AEC to Col. Hasbrouck, 8 June 1948, subject: "Personnel Clearance for AFSWP Personnel, Ref: SWPIN", and "Enclosure 'A' - (Revised)" therewith, ~~App. 14.~~ Ref. 186.)

A very important feature of this correspondence was the establishment of the principle that because of the intimate operational relationship between the AFSWP and the AEC, including contractors of the AEC, all personnel assigned to the AFSWP would receive "Q" type clearances rather than the service or "M" type. This principle is set forth in the letter from the AFSWP to the AEC of 1 May 1948, (Ref. 187).

The history of the procedures for clearance of AFSWP personnel has been set forth above in some detail because of its importance. Until 8 June 1948, the entire personnel clearance program was based on nothing but informal working agreements at staff level, and it was susceptible to any change in policy that the AEC might make without prior reference to the AFSWP. Furthermore, personnel changes in the Central Clearance Branch of the AEC usually resulted in nearly disastrous, although temporary, breakdown of clearance operations. Upon the establishment of the formal procedures, however, such difficulties were, to a great extent, eliminated, and reference to the letters of 1 May and 8 June 1948 normally settled immediately all disagreements as to policy or procedure.

~~4.9.3. Classification Guide.~~

~~In September 1947, at the direction of General Groves, the~~

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e. Clearance Categories for Visitors.

When the Security Division first began to function, early in 1947, agreement was made with the Atomic Energy Commission to use the same general categories for all visitors to the installations of the AFSWP, as well as the installations of the AEC. These categories, thus adopted by the AFSWP, were designated by specific classifications defining the types of information, etc., to which the visitors were to have access, and each classification was given a letter symbol, as follows (quoted from "Obsolete" document, undated, in Security Division Files):

Category	Definition of Information, etc.
A	Size, weight, center of gravity, ability to withstand accelerations, ballistic properties.
B	Developments in prospect in size, weight, shape, ability to withstand accelerations, ballistic properties.
C	Structure of an atomic weapon, "Little Boy" and "Fat Man" details of construction; visit to Delta Building.
D	Use of nuclear energy for atomic power, details of fast reactor.
E	Use of atomic power for guided missiles, planes, etc.
F	Explosives as used in atomic weapons; detonators.
G	Electronics as used in atomic weapons, fusing and firing.
H	Mechanical parts of atomic weapons not including complete assembly data.

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Category	Definition of Information, etc.
I	Plutonium chemistry, metallurgy, fabrication of weapons, visit to DP Site.
J	Uranium 235 chemistry, metallurgy, fabrication for weapons.
K	Polonium chemistry, metallurgy, fabrication, initiator, construction for atomic weapons, visit to DP East.
L	Stockpile and storage problems of atomic weapons. Each case will be cleared by General Groves personally; information will not be disseminated thereon without positive assurance that General Groves has so cleared the person in question.
LA	Construction for stockpile and storage. Theoretical aspects, design, cost, etc. Does not include visit to construction sites.
LV	Visits to construction sites. Includes LA.
M	Assembly, handling and delivery problems of atomic weapons.
N	Fission physics including fast reactor, water boiler.
O	Future developments in atomic weapons; implosion type weapons, gun type weapons, smaller weapons.
OA	Physical characteristics of new developments.
OB	Nuclear characteristics of new developments.
P	"Super"
Q	Medical problems (this might be limited to one of the other subjects).
R	Administration in connection with _____. Includes clearance for personnel to receive certain classified information in connection with administrative problems; i.e., a specialist to visit "Y" in connection with the housing problem would have to know our population forecast.

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Category	Definition of Information, etc.
S	"Cooks Tour". For distinguished visitors, normally non-technical. Includes limited technical details of general knowledge only but is primarily to show magnitude, complexity and difficulties of plant.
T	Comprehensive Clearance. Includes detailed information of all categories, except L, LA, and LV.
U	Callium chemistry, metallurgy, and fabrication.
V	Electronic instrumentation for health and/or research.
W	Pumpkins, i.e., exterior characteristics of pumpkins - mainly applicable to AAF and AAF coordinated activities (example: pit loading equipment, etc.).
X	Silverplate
Y	C-97 modification (Chickenpox)

These categories remained in use by the AFSWP until October 1948, when the following new "Clearance Categories for Official Visitors" became effective (quoted from document dated 15 November 1949 in Security Division Files):

Alpha (Weapon Data)	Beta (Non-Weapon Data)	Category	Definition
Alpha	no	1.	Size, weight, center of gravity, ability to withstand accelerations, ballistic properties.
Alpha	no	2	Developments in prospect in size, weight, shape, ability to withstand accelerations, ballistic properties.
Alpha	no	3.	Structure of an atomic weapon, "Little Boy" and "Fat Man" details of construction.

[redacted]

Alpha (Weapon Data)	Beta (Non-Weapon Data)	Category	Definition
Alpha	Beta	4.	Explosives and detonators
Alpha	Beta	5.	Electronics (including, in Alpha clearance, fusing and firing).
Alpha	no	6.	Mechanical parts of atomic weapons not including complete assembly data.
Alpha	no	7.	Assembly, handling and delivery problems of atomic weapons.
Alpha	Beta	8.	Handling and delivery problems of atomic weapons, including plane modifications.
Alpha	no	9.	Physical characteristics of new developments in weapons.
Alpha	Beta	10.	Nuclear characteristics of new developments in weapons, including "Super".
Alpha	no	11.	Complete clearance. Includes detailed information of all categories except stockpile and production information.
Alpha	Beta	12.	Plutonium chemistry, metallurgy, fabrication, visit to DP East (including, in Alpha clearance, initiator construction but not stockpile).
Alpha	Beta	13.	Uranium 235 chemistry, metallurgy, fabrication.
Alpha	Beta	14.	Polonium chemistry, metallurgy, fabrication, visit to DP East (including, in Alpha clearance, initiator construction but not stockpile).

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Alpha (Weapon Data)	Beta (Non-Weapon Data)	Category	Definition
no	Beta	15.	Non-weapon nuclear physics including fast reactor and water boiler.
Alpha	Beta	16.	Medical and health problems, including health research and instruments.
Alpha	Beta	17.	Special clearance in connection with administration, construction, "Cook's tour", safety, or allied matters, details to be spelled out. Includes clearance for personnel to receive certain classified information in connection with administrative problems.
Alpha	Beta	18.	Effects of nuclear explosions and their measurement.
Alpha	no	19.	Clearance to attend Bomb Commander Course, Weaponeer Course, Staff Off. Orientation Course, or classified portion Assembly Team. (Course and No. must be stated with category when granted).
no	Beta	20.	Access to Sites (designated) in connection with operations (includes 21).
no	Beta	21.	Access to Sites (designated) in connection with defense.
no	Beta	22.	Access to Sites (designated) in connection with construction.
no	Beta	23.	Access to Sites (designated) in connection with administration.

[redacted]

Alpha (Weapon Data)	Beta (Non-Weapon Data)	Category	Definition
Alpha	no	50.	Stockpile and/or production information. By approval of Chief, AFSWP only. Extent to be spelled out in each case.

In a later chapter (chapter 6, "Storage Bases") a list is given of persons authorized by Headquarters, AFSWP, to have permanent "LV" clearance, under the earlier (1947) classification of categories; persons authorized to have permanent clearances of various categories under the later (1948) classification are also listed, in a separate table. ~~(See par. 4-9-2c.)~~

4-9-3. Classification Guide.

In September 1947, at the direction of General Groves, the

Security Division made a survey to determine the feasibility of preparing a classification guide for the entire atomic energy program. The results of this survey were disappointing, as, with the exception of Rear Admiral John Gingrich, Director of the Office of Security and Intelligence, AEC, responsible officials of the AEC were somewhat cold to the idea; therefore, the plan died in infancy, when strenuous resistance was met at the working level. But the need for a guide to classification, particularly within the armed services, became increasingly apparent as the atomic energy program was stepped up in the National Military Establishment. In addition, the accelerated military program was being held back by the very restrictive clearance requirements for access to restricted data.

On 22 March 1948, after nearly a year of negotiations, the AEC had authorized the dissemination, with military safeguards only, of all Crossroads information except for five exempted categories, but had required that all such information should be still designated as restricted data. The AEC further signified its willingness to consider the application of these policies to other types of restricted data requiring wide dessemination.

On 30 March 1948, the Military Liaison Committee requested the AFSWP to prepare a classification guide for military material in the field of atomic energy. The guide was to cover two categories of restricted data, namely: (a) that which required specific restricted data clearance; and (b) that which did not require specific restricted data clearance.

Although it was obvious that only a beginning on this project could be made in the less than thirty days allowed, a panel was hastily brought together, composed of representatives of: the AFSWP; the Research and Development Group, Logistics Division, GSUSA; Op-36,

USN; and the Special Weapons Group, USAF. On 30 ~~June~~ April 1948, a draft of the proposed guide was submitted to the Military Liaison Committee, with the recommendation that more study be given to the draft before it should be considered adequate.

The draft was then returned informally to the AFSWP, augmented considerably, coordinated at staff level with the AEC and the Joint Chiefs of Staff, and resubmitted to the MLC as an agenda item on 27 May 1948.

The draft of the guide was approved by the Military Liaison Committee and forwarded to the AEC for approval on 15 June 1948 (Ref. 188). After that date the section on weapons effects was studied by an ad hoc Weapons Effects Classification Board (appointed by the General Manager of AEC) and considerably revised, and a section on radiological warfare was added. As of 31 December 1948, it seemed probable that the guide would receive final approval early in the year 1949.

The guide, as proposed, would show, for the first time, the appropriate military classification, from top secret to unclassified, for a broad range of categories of atomic energy information. The following three types would be included:

(a) Type A, defined as restricted data to which access might be permitted only by persons holding appropriate restricted data clearances;

(b) Type B, defined as restricted data which might be disseminated with military classification safeguards only; and

(c) Information which, while relating to atomic energy, is not considered to be restricted data.

4-9-4. Public Relations.

Aside from security review of documents referred to the AFSWP from the Public Information Division, Department of the Army, the principal function of the Public Information Officer of the Security Division was to prevent publication of material concerning classified activities of the AFSWP. In answer to press inquiries regarding the military assignment of General Groves, it was necessary to issue on 24 July 1947, a guarded statement delineating the responsibilities and activities of the AFSWP, and acknowledging, for the first time, the fact that Sandia Base was an installation of the AFSWP. As a result of ~~a~~ sensational newspaper articles in the Denver Post, on 24 and 25 August 1947, it was necessary to invite attention again to the original release. (See Joint Army-Navy Release, 24 July 1947) (Ref. 189, 190) ~~App. 14.~~ (See also Security, Sandia Base, Chap. 5.)

From time to time, steps have been taken to prepare for inadvertant release of information concerning Sites Able and Baker.

4-9-5. Security of Igloo and Ordnance Areas, Sandia Base.

In November 1947, a survey of Sandia Base was conducted by representatives of: the Joint Congressional Committee on Atomic Energy; the Security Division, AFSWP; and Sandia Base. It was determined by this survey that the physical safeguards of the Igloo and Ordnance areas were not sufficient for the valuable equipment and supplies which they contained. After a thorough study of requirements, Sandia Base was authorized by letter on 12 December 1947 to proceed with an extensive security construction program. This program included the installation of double chain-link fences, interior fences around individual structures, additional guard towers, a centrally located guard house, and additional

flood lights. This construction program was essentially complete by the early fall of 1948.

4-9-6. Other Activities.

a. Surveys for Other Agencies.

The Security Division rendered assistance to other Government agencies on frequent occasions by performing security surveys and making recommendations for better security control. Among these agencies were: Office of the Chairman, Military Liaison Committee; the Chemical Center, Edgewood Arsenal; and Project RAND.

b. AFSWP Headquarters Offices.

When the AFSWP first moved to the Pentagon, on 15 April 1947, the office space assigned on the fifth floor was not considered sufficiently secure. A survey of the building was made and an appropriate area on the second floor was selected. The current occupants were moved and the area was converted into a secure installation, designed to meet the specific needs of the AFSWP. The Intelligence Division, USA, and the Office of Naval Intelligence made security surveys of the installation and had no recommendations to offer. When the AFSWP Headquarters moved to their new offices on the second floor on 6 and 7 October 1947, a permanent guard post, and a pass and badge system, which had been impossible in the old location, were instituted. (See also par. 4-1-2.)

c. Clearance Processing.

By 31 December 1948, the AFSWP had processed a total of 8,244 "Q", or formal, clearances (see par. 4-9-2d) and 7,761 "P", or informal clearances, based on central files checks by the FBI. The latter type of clearance was granted for employees of contractors who would not have access to Restricted Data, and would not work in an exclusive or limited area, but would work in a controlled area.

d. Visitor Control at Sandia Base.

Both the AFSWP and the AEC had classified installations

within the same restricted enclosures at Sandia Base during the year 1947. While that situation continued, admission to the area gave possible access to the classified information of both agencies, and therefore a very cumbersome system of visitor control was necessary, which involved sending duplicate TWX's from the headquarters of both the AFSWP and the AEC whenever a visitor from either agency went to Sandia Base.

As soon as a physical separation of the installations of the two agencies at Sandia Base had been completed, in the early spring of 1948, the Security Division of the AFSWP approached the AEC, with a view to simplifying and streamlining the visitor control procedures. The proposed plan was subject to some opposition and considerable delay by the AEC, but a written proposal submitted in May 1948 finally received the oral approval of the AEC in July, and was immediately put into effect. Under the new procedures there was no requirement for any liaison between the AFSWP and the AEC, except in the case of an individual from one headquarters making a visit to the other's installation.

e. Completed Storage Sites.

The occupation of completed storage sites by AFSWP forces raised almost endless series of security questions. Although it was distinctly desirable, from the standpoint of national security, to suppress any knowledge of the interest of the AFSWP in these locations, it was recognized before occupation that this was, in fact, impossible. The physical movement of military personnel and their dependents from Sandia Base to the first site, and normal administrative and supply activities, nullified any absolute security of this kind.

Recognizing this limitation, the security program for the

sites was based on a policy of rigidly controlling information concerning the sites when possible, but, in instances where information could not be suppressed, of handling it in a realistic manner to prevent the attraction of undue interest. For example, Sandia Base was authorized to process for a site, as unclassified matters, the routine requisitions, court martial records, and other papers which had to be handled through routine channels, inasmuch as a high classification would have drawn attention to them immediately. On the other hand, military correspondence between Sandia Base and other headquarters, revealing the interest of AFSWP in a site, was classified Secret in order to insure proper handling.

As a further step in preserving the anonymity of the sites, cover names were assigned for the purposes of mailing address of personnel, shipment of supplies, etc. In one instance, the site was given a distinctive military designation although it lies within the boundaries of an established army post. In another case, the name of a nearby Air Force Base was "borrowed" for this purpose. All official mail between the sites and Sandia Base was sent through a dummy cover address. No correspondence took place between Headquarters, AFSWP, and any storage site.

f. Liaison.

Throughout its operations, the Security Division maintained close liaison, on a personal basis, with the following agencies: Security Division, AEC; Intelligence Division, GSUSA; Security Office, AFOAT; Security Office, JCS; Security Office, Op-36; Security Office, MLC; Office of the Air Provost Marshal; Headquarters, CIC, Holabird, Maryland; FBI. Liaison was maintained with Sandia Base, with the Area Engineer in Kansas City, and with all the storage sites, by frequent field trips. These trips have nearly always resulted in recommendations

to the field for improved operations.

g. Security Lectures.

In December 1947, a representative of the Security Division attended the first of the series of Staff Officers' Orientation Courses given at Sandia Base. The recommendation was made that considerably more time be devoted in subsequent courses to the problem of security. On request, the Division prepared a security lecture for that purpose, and this was used for the security portion of the course in later sessions.

h. Exercise "Assembly".

During the preparatory stage of Exercise "Assembly", Third Army maneuver held at Camp Campbell, Kentucky, in May 1948, concern was expressed that air photos might reveal certain classified construction in that area. A representative of the Security Division was attached to the Maneuver Commander's staff to brief pilots, screen photographs and act as adviser to the Maneuver Commander on matters affecting security. At one stage of the exercise, the Security Division had officers at: Camp Campbell; Smyrna Air Force Base; New York City; and Wright-Patterson Field, Ohio; they opwerd ~~operating~~ in conjunction with Army Field Forces, Air Material Command, Office of Chief of Engineers, and Army Signal Corps, in screening reconnaissance photographs, commercial newsreels, and color camouflage detection photographs.

4-9-7. Organization and Personnel.

The Charter of the AFSWP stated that the Security Division would require, for personnel, "a Chief and Assistants and a trained Public Relations Officer or civilian".

a. Chiefs.

Upon the activation of the AFSWP, Captain Wayne A. Blair, USA, was transferred from the Manhattan District and was designated Security Officer. 1st Lt. Josephine L. Redenius, WAC, was also transferred from the Manhattan District at the same time, and designated Assistant Security Officer. (As stated in paragraph 4-9-1, at that time there was no other personnel in the Security Division.)

On 6 June 1947, Major Joseph J. Jackson, USA, was transferred from the Manhattan District and became Chief of the Security Division.

Lt. Colonel Staunton L. Brown, USA, was transferred from the Manhattan District and succeeded Major Jackson as Chief of the Division on 10 August 1947. Colonel Brown served as Chief for the balance of the current period of the History. (He was succeeded by Lt. Colonel J. D. Fleming, USAF, on 4 February 1949.)

b. Organization.

The Security Division, as of 31 December 1948, contained various units, including: the Physical Security Branch, and, under it, the Top Secret Control Section, and the Classified Reproduction Section; the Personnel Security Branch; and the Public Relations Office. The functions of these units have been described in a previous paragraph.

Captain Robert R. Cook, USA, was designated Chief of the Physical Security Branch on 7 July 1947. The Top Secret Control Section was established on 16 July 1947, and the Classified Reproduction Section was established on 12 November 1947, both under the Physical Security Branch.

The Personnel Security Branch was organized in August 1947 by Captain Wayne Blair. It operated under his supervision until 23 August 1948. At that time Captain Blair was transferred and replaced by Captain William Mann. The branch remained under Captain Mann until his transfer

on 29 October 1948. He was replaced by 1st Lt. Francis C. Smith.

The functions of the Public Relations Office were formally delegated to the Security Division on 12 August 1947, as previously noted (see par. 4-9-1 c (4)). On that date, Major Jackson, who had just been relieved as Chief of the Division, was assigned as Public Relations Officer.

c. Total Personnel.

As we have seen, the Security Division started with total personnel of two officers, and on 6 June 1947 it comprised three officers, four enlisted, and one civilian. On 10 August 1947, it had four officers, three enlisted and two civilians. The peak of the Division's personnel during the current period of the History was reached in October 1948, with a total strength of seventeen. As of 31 December 1948, the total strength was sixteen, composed of 7 officers (4 USA, 3 USAF), 3 enlisted (USA) and 6 civilians.

PERSONNEL AND ADMINISTRATION DIVISION. ~~(AFP. 15.)~~ (Ref. 191)

4-10-1. General.

The Personnel and Administration Division was the first of the six original divisions of the Headquarters of the AFSWP authorized officially by the memorandum charter of 8 July 1947 (see par. 3-5 c). Its responsibilities were therein described as follows: "This Division will have general charge of personnel administration. It will keep the files. It will, in coordination with the Operations and Training Division, make recommendations for student quotas at civilian and military educational institutions. It will be charged with legal matters and with inspections. For personnel, it will require a Chief who can be of any branch with comparatively junior assistants to handle personnel matters of the other two branches. It will require a trained Judge Advocate, particularly qualified in contract matters, and an Inspector General."

The Division may be said to have been activated at the time of the establishment of the AFSWP by the Secretaries of War and the Navy on 29 January 1947, effective as of 1 January 1947 (see par. 2-2). Among the officers, of the Manhattan District, who were loaned to the AEC as of 31 December 1946 but were very soon transferred back to the AFSWP, were Lt. Colonel J. B. Lampert, USA, who had formerly been General Groves' executive officer, and Major John C. Healey, USA, who had also been a member of General Groves' staff in Washington, D. C., and these two officers organized the Personnel and Administration Division.

The Division, as finally organized, was composed of:

three service personnel sections, to handle personnel procurement and other personnel matters for each of the three services, Army, Navy and Air Force; a branch to handle civilian personnel; an Administrative Branch; and Inspector General's section; and a Judge Advocate General Officer.

4-10-2. Service Personnel Sections.

In the beginning, the AFSWP consisted almost wholly of Army Officers, and therefore the Personnel and Administration Division was at first composed solely of what was known later as the Army Section. As the Project continued, during the current period of the History, to consist predominantly of Army personnel, the Army Section continued to be the largest of the three service sections. The functions of this section pertained to Army administration and personnel for both the AFSWP Headquarters and Sandia Base.

The Navy Section (consisting of one Navy officer) was established on 29 September 1947. It handled the administration work concerned with the Navy Personnel of the project.

When Air Force personnel first came to the AFSWP they were officially assigned to Headquarters, AFSWP, and they continued on this status through most of the current period of the History, with Captain Herbert M. Foster, USAF, handling administrative matters pertinent to the Air Force. With the activation of ~~Hq & Hq Sq, USAF~~ an Air Force Special Reporting Agency (Hq. & Hq. Sq.), AFSWP, ~~Bolling Air Force Base, D. C.,~~ on 28 August 1948, however, these Air Force personnel were assigned to the new unit, for reporting purposes only. (See General Order 16, Headquarters Command, USAF, Bolling Air Force Base, 20 August 1948, ~~P & A Div. Files.~~ Ref. 192.) At that time Captain Foster was designated Chief of the Air Force Personnel Section, and this

section supervised all matters pertaining to administration of Air Force officers and enlisted personnel on duty with Headquarters, AFSWP, and subordinate installations.

4-10-3. Civilian Personnel Branch.

At a meeting in March 1947 with representatives of the Management Office, Office of the Chief of Staff, the following conclusions were reached with respect to the administration of civilian personnel of the AFSWP:

(1) That the AFSWP would be set up as a field agency.

(2) That the departmental civilian staff attached to the Project's headquarters would be considered "field in Washington".

(3) That the Project "would establish its own personnel office to administer on a self-contained basis all aspects of civilian personnel administration, including classification of positions, recruitment, employment, employee relations, training, efficiency ratings, personnel transactions, preparation of reports, suggestions and awards, grievances, and other related personnel activities". (See Memorandum of Record, dated 27 March 1947, signed by Donovan Q. Zook, Assistant Chief, Management Office, OC of S, Y Ref. 193.)

On 21 March 1947, Colonel S. V. Hasbrouck, Chief of Staff, AFSWP, submitted to Brig. General H. I. Hodes, Assistant Deputy Chief of Staff, U. S. Army, a memorandum in which it was proposed that the civilian personnel procedures of the AFSWP would be the same as those defined in the civilian personnel program of the War Department, the Chief of the Project to exercise the authority defined in paragraph 2 of War Department Orders C, 6 June 1946, "for independent installations

reporting directly to the War Department". This memorandum indicated concurrence, on behalf of the Navy Department, by Rear Admiral W. S. Parsons, Deputy Chief, AFSWP. By first indorsement, dated 26 March 1947, Lt. Colonel C. Clough, Jr., Chief, Management Office, OC of S, U.S. Army, indicated concurrence by the Assistant Deputy Chief of Staff, ~~(See G-1 Branch File.)~~

The Civilian Personnel Branch of the Personnel and Administration Division was activated on 1 April 1947, to handle the necessary civilian personnel activities at Headquarters, AFSWP, and to exercise staff supervision over the civilian personnel program at Sandia Base and at any other field locations where such programs might be initiated. Its components and their principal routine duties may be briefly summarized as follows:

a. The Chief of the Branch: to plan, direct, and coordinate the civilian personnel program; to cooperate with other units of the AFSWP; and to represent the Project in contacts with outside agencies on civilian personnel matters.

b. The Employee Utilization Section: to recruit Employees; to aid in establishing standards of performance; to counsel with employees and assist in the maintenance of good work relationships; to provide clerical assistance within the Branch; and to perform all routine processing of personnel actions, maintaining files and records, and preparing personnel reports.

c. The Classification and Wage Administration Section: to analyze and evaluate civilian positions and prepare position descriptions; to conduct surveys and recommend changes in title or grade; to evaluate and prepare descriptions of newly established positions; and to assist

in obtaining and maintaining equitable wages for ungraded positions.

d. The Payroll Section: to prepare and certify payrolls; to maintain time and leave records and retirement records; to operate the payroll deduction plan for bond purchases; to prepare all necessary payroll information reports; and periodically to audit the work of payroll sections at field installations.

4-10-4. Administrative Branch.

The Administrative Branch of the Personnel and Administration Division was established on 31 May 1947. The routine services provided by this Branch, in general for the entire AFSWP Headquarters, included the following:

a. Travel. The Travel Section issued travel orders and transportation requests, and made transportation and hotel reservations.

b. Teletype. The Teletype Section was responsible for operation of wire communications between Washington and Sandia Base, regardless of classification, and for transmittal elsewhere of unclassified matter only. The Security Division was responsible for the security of the classified messages (see par. 4-9-1c(6)). This service was normally operated only during the business day, but was equipped for 24 hours operation if required.

c. Supplies. The Supply Section maintained all necessary types of supplies for AFSWP Headquarters.

d. Message Center. The Message Center was responsible for the distribution of all incoming and outgoing mail of AFSWP Headquarters. It also handled mimeograph and ditto duplication work.

e. Central Files. All files of AFSWP Headquarters, except the Top Secret Files, which were in the custody of the Security Division (see par. 4-9-1 c(2)) were kept by the Central Files Section. This

section coordinated fully with the Message Center.

f. Motor Pool. The motor pool consisted of three drivers and three vehicles. Maintenance was handled by the Motor Center of the Military District of Washington. One vehicle was used almost exclusively by the Chief, AFSWP, and his immediate staff. The other two vehicles were used for mail runs, and trips to the AEC, Bolling Field and other Washington points when required.

g. Draftsman. ~~Draughtsman~~. A draftsman was held available for service to all divisions of the AFSWP headquarters, coordinated through the Chief of the Administrative Branch.

h. Property and Parking. The Chief of the Administrative Branch, in addition to his other duties, served as Property Accountability Officer and as Parking Control Officer, for AFSWP Headquarters.

4-10-5. Inspector General.

The charter of the AFSWP, of 8 July 1947, contained the statement that the Personnel and Administration Division would require an inspector general. On 28 November 1947, Major Robert R. Hall, IGD, USA, reported for duty with the AFSWP as inspector general, but he was hospitalized on 9 December 1947, so that his service with the project lasted only a few days. Except for this brief period, the AFSWP had no regularly assigned inspector general until 15 June 1948, and during that time the Office of the Inspector General and the Commanding General of the Fourth Army were called upon whenever the services of an inspector general were necessary. On 15 June 1948, Major Richard E. Cox, IGD, USA, reported for duty, and he served as inspector general of the AFSWP for the balance of the current period of the History. Major Cox had

been permanently assigned to the Project as early as 28 January 1948, but completion of an overseas assignment and delay in transit had prevented him from assuming his duties earlier.

The mission of the Inspector General of the Project was to supply information when appropriate, to suggest ways and means to improve conditions, to inquire into and report upon matters which per-

tained to the efficiency and economy of the Project and the U. S. Army as a whole, to afford periodically recurring opportunities for all military personnel to register grievances, and to make such inspections, investigations, surveys, studies and reports as might be prescribed by law or regulations, or directed by the Chief of the Project.

4-10-6. Judge Advocate General.

The charter of the AFSWP also stated that the Personnel and Administration Division of the AFSWP would require "a trained Judge Advocate, particularly qualified in contract matters". Arrangements were made with the Judge Advocate General's Office to place an officer of his department on additional duty with AFSWP Headquarters. The first officer in this position, Major W. N. J. Nelson, USA, assumed his duties in November 1947.

4-10-7. Personnel Procurement.

a. Military.

The initial Army personnel of the AFSWP, assigned from the Manhattan District, was gradually augmented by additional Army personnel and by Navy and Air Force personnel as well. To accomplish the mission of the Project, highly qualified officers and enlisted personnel, experienced in technical fields, were required, and therefore the procurement of suitable personnel was not easy. On 10 June 1948, General Nichols addressed identical letters to the Chief of Staff, USA, the Chief of Naval Operations, and the Chief of Staff, USAF, setting fourth a proposal for equitable personnel support (both military and civilian) of the Project by the three services. This proposal was approved in principle

by the three services, and each provided its proportionate share of military personnel.

(1) Enlisted Personnel.

For procurement of enlisted personnel, authority was obtained from the Department of the Army to screen enlisted personnel at various Army installations, with special emphasis on those of electrical or mechanical experience, gained while in the service or elsewhere (Ref. 194a). A group of officers from the 38th Engineer Battalion (Special), at Sandia Base, all of whom were thoroughly familiar with the type of personnel required, were responsible for interviewing and screening the records of personnel at the Army stations in certain areas. This action resulted in procuring the assignment of 55 highly qualified enlisted personnel, experienced in such fields as mechanics, electricity, and electronics.

The authority described above was issued on a one-time basis, and another similar survey was carried out some months later, in November 1947. This was a time-consuming and expensive procedure, however, and it was accordingly proposed that a new plan be instituted, whereby personnel with certain required qualifications would be automatically assigned to Sandia Base by training divisions and by Ports of Embarkation (Ref. 194b). This plan was approved by the Army and the necessary instructions were issued to the installations involved, but it did not accomplish effectively the purpose for which it was intended. Only about 20 qualified personnel, who not only met the conditions of the selection criteria established by the AFSwP (see later par. of this section), but also had the required technical qualifications, were thus obtained, and it became apparent that another procedure must be instituted. It was then proposed (in November 1948) that a number of school-trained personnel in specific Military

Occupational Specialties would be assigned to the Project upon completion of their courses of instruction, as it was felt that this would result in a more effective and reliable replacement stream. Action was initiated by the AFSWP and coordinated with the Chief Signal Officer, Department of the Army, and the Adjutant General, to put the policy into effect. Many qualified enlisted technicians were secured in this manner. (Ref. 194c.)

The selection criteria for enlisted personnel, referred to above, were established for the purpose of reducing the number assigned to the Project who were lost through non-clearance. These criteria were set forth in Department of the Army Circular 98, dated 8 April 1948 (Ref. 195). Enlisted personnel had to meet the following requirements:

(a) They must have U. S. citizenship;
(b) They must fulfill minimum age requirements;
(c) They must have had no record of time lost under AW 107 or of a special or general court martial;
(d) Any previous discharges must have been under honorable conditions;
(e) They must have a minimum of 18 months to serve in current enlistment with at least 24 months service subsequent to 7 December 1948;

and the following personnel could not be assigned to the project:

i Enlisted men granted waivers by the Adjutant General under the provisions of DA Circular 66, 1948 (Ref. 196);

ii Restored prisoners under the provisions of WD Circular 88, 1947 (Ref. 197);

iii Enlisted men whose intelligence files contained information which, in the opinion of the appropriate intelligence officers, would prevent clearance for duties on classified projects.

These criteria were strictly enforced.

(2) Officers. [redacted] SECURITY INFORMATION

To secure a high standard of officer personnel, TAG 201 files of all Army and Air Force officers being considered were scrutinized before assignment to either the headquarters or the subordinate units of the AFSWP. Because of the various technical aspects of the work of the AFSWP, many officers who had completed graduate studies in technical fields were procured for duty, both in Washington and at Sandia Base.

Procurement of Air Force officers for duty with the AFSWP was coordinated through the Office of the Deputy Chief of Staff, USAF, Operations for Atomic Energy. Nominations were received from that office, and the official 201 file of the nominee was obtained from the Air Adjutant General for review. If the individual was considered suitable for assignment to the Project, complete data were forwarded to the lower units, which then advised if assignment was desired.

For Navy personnel, requests for additional allowances, as required by Headquarters, AFSWP, or by Sandia Base, were forwarded to the Chief of Naval Operations, Attention: Op-36, Director of Atomic Defense.

The care exercised in screening the TAG 201 files and the efficiency reports of officers before assignment rendered it unnecessary to apply the selection criteria which have been described above for enlisted personnel. Loss of officers because of denial of clearance was extremely rare. (See also par. 4-10-8, "Stabilization Policy".)

(3) Warrant Officers.

Early in 1948, a program was instituted to establish Regular Army Career Warrants relative to the activities of the AFSWP,

for personnel assigned to the 38th Engineer Battalion (Special) at Sandia Base. The Department of the Army authorized four such types of warrants: Armed Forces Career Warrants, Types A, B, C, and D, all technical in nature. Minimum standard scores for the technical examinations were established to prevent unqualified individuals from receiving Regular Army warrants. (Ref. 198.) These programs resulted in the appointment of fourteen enlisted men as warrant officers (Junior Grade) Regular Army, although more were required. (Ref. 199.)

b. Civilian Personnel.

A considerable amount of difficulty was experienced, both in Washington and at Sandia Base, in procuring appointments of civilian personnel in accordance with the competitive requirements of the Civil Service Act. Efforts were made to have the AFSWP exempted from these requirements, with conferences between representatives of the AFSWP, of the Civilian Personnel Division, Office of the Secretary of the Army, and of the Civil Service Commission. On 13 April 1948, the Commission approved the making of "appointments to investigative, professional, subprofessional, technical and scientific positions" in the AFSWP "under Schedule A-(4)-(iv) of Civil Service Rule VI", which had the effect desired insofar as these types of appointments were concerned. The Commission ruled, however, that "appointments to administrative and clerical positions in this Project must be made in accordance with the usual civil service procedures". (Ref. 200.)

The difficulty, which developed during 1948, in procuring

personnel authorizations of sufficient scope to permit the accomplishment of the overall mission of the AFSWP, culminated in the letter which General Nichols addressed to the three services on 10 June 1948, which applied to both military and civilian personnel (see par. 4-10-7 a; also, Security Div. File, C-401.) The Army and the Air Force provided authorizations for the employment of civilians, but the Navy Department found that administrative procedure was lacking which would enable it to allocate civilians directly to the Project. After much discussion, the Chief, Manpower Group, Office of the Army Comptroller, was requested to allocate the required civilian spaces entirely out of the authorized ceiling of the Department of the Army, which was understood to have been augmented so as to allow certain spaces to be filled by individuals engaged in Air Force and Navy functions under the administrative control of the Department of the Army. On 31 December 1948, action on this request was pending, but it was anticipated that the Air Force authorization, direct to the Project, of 425 civilian spaces would continue in effect, and that the Army would furnish an authorization for 455 spaces, comprising 340 spaces acknowledged to be the Army's proportionate share and 115 spaces estimated as the Navy's share, making a grand total of 880 civilian spaces authorized to the Project. (See correspondence in files of Civilian Personnel Branch.)

4-10-8. Stabilization Policy.

In January 1948, a policy was effected to stabilize tour of duty assignments of officers assigned to the AFSWP. A memorandum which General Groves sent to the Chief of Staff, USA (Ref. 201) (with similar

memoranda to the Chief of Naval Operations and the Chief of Staff, USAF), read in part as follows:

"Due to the highly technical character of the duties performed by personnel with this Project, even a superior officer does not reach a reasonable degree of usefulness until he has been with the Project for at least six months. It follows that an officer should remain with the Project for at least two years. On the other hand if the officer should continue with this highly specialized duty, during a single tour for more than four years, his proper career development will suffer. A two to four year tour of duty, therefore, appears to be a practical and desirable normal detail, the exact duration to depend largely on the career development value of any proposed assignment. There is also involved the matter of foreign service for personnel who have served with atomic energy agencies. Every officer on duty with this project undergoes a searching investigation by the Federal Bureau of Investigation. Most officers subsequently come into possession of a certain amount of highly classified information. It would appear that, for at least two years after relief from atomic energy duty, almost any officer is certain to possess knowledge and information valuable to a foreign power."

Upon the recommendation which General Groves made in this memorandum, the following policy relating to Army officers assigned to the AFSWP and related activities was announced:

(a) The normal tour of duty assignments would be three years, and the maximum four years.

(b) Every effort would be made to meet requirements through the assignment of officers whose previous foreign service was such as to make them relatively ineligible for further foreign service; but any officer so assigned would be assured of a minimum tour of two years from date of assignment, regardless of the amount of foreign service rendered.

(c) Upon relief from such assignment, an Army officer would be ineligible for foreign service for a period of two years, except for assignment to those areas which might be specifically designated by the Chief of the AFSWP. (Ref. 202) ~~(See P & A Div., GSUSA DF, Subject: "Army~~

For enlisted men, a normal tour of duty of two years with the AFSwP was established two months later (Ref. 203).

A similar program for the Air Force was established for both officers and enlisted men, by AFL 35-136, dated 13 May 1948 (Ref. 204).

The Chief of Naval Personnel was in general agreement with the policy recommended by the Chief of the AFSWP. In a letter dated 5 May 1948, he stated that when special considerations made it desirable that officers be restricted as to their duty assignment their cases would be referred by the Chief of Naval Personnel to the Chief of Naval Operations, for resolution of the matter with the Chief of the AFSwP. (Ref. 205.) By 1st Indorsement the Chief of Naval Operations stated that recommendations as to future assignments should be submitted by the Chief, AFSwP, to the Chief of Naval Operations for consideration. (Ref. 206.)

4-10-9. Civilian Schooling for Officers.

One of the responsibilities of the Personnel and Administration Division which was prescribed by the memorandum charter of 8 July 1947 was that it should make recommendations for student quotas at civilian and military educational institutions. Before the charter was issued, however, a change was made in this responsibility, by

Administrative Memorandum No. 16, Headquarters AFSWP, dated 25 June 1948 (Ref. 207). This memorandum stated:

"Matters affecting civilian educational institutions, which have heretofore been the primary responsibility of the Personnel and Administration Division, are assigned as a primary responsibility to the Operations and Training Division of Hq., AFSWP. The assignment of individuals to and from schools remains as a P & A function, accomplished in accordance with normal staff procedures."

In carrying out this policy, the Operations and Training Division established the requirements for officer personnel educated at postgraduate levels, while the Personnel and Administrative Division filled these requirements. This program pertained primarily to Regular Army Officers, to be trained in electronics, electrical engineering, metallurgical engineering, nuclear and optic physics, mechanical engineering, mathematics, and personnel administration and statistical analysis (Ref. 208).

Requirements were filled by officers from any of the combat arms and technical services (predominantly the Corps of Engineers), provided that they had demonstrated a high capacity for academic work, as well as outstanding efficiency. Officers with prior background education and experience in the appropriate technical field were desired.

4-10-10. Organization and Personnel.

a. Chiefs.

Lt. Colonel J. B. Lampert, U/S/A/, became Chief of the Personnel and Administration Division, officially, on 12 February 1947, the date of his transfer to the AFSWP from loan to AEC. He served as Chief from then until 2 July 1948 (when he became chief of the Special Projects Division), and was succeeded by Major John C. Healey, USAF who had been transferred to the AFSWP as of 28 February 1947 and had served as Deputy Chief of the Division.

Major Healey served as Chief throughout the balance of the current period of the History.

b. Organization.

(1) Service Personnel Sections. As of 31 December 1948, the Army Section was headed by WO G.W. Davis, USA ; the Navy Section was headed by Lt.(jg) S. G. Poole, USN, who reported for duty on 29 September 1947; and the Air Force Section was headed by Captain Herbert M. Foster, USAF.

(2) Civilian Personnel Branch. Mr. John A. Rosado served as Chief of the Civilian Personnel Branch of the Personnel and Administration Division from 14 April 1947 throughout the current period of the History. The Employee Utilization Section was headed by Miss S. Olson; the Classification and Wage Administration Section by Miss M. J. Schafer; and the Pay Roll Section by Mr. N. W. Martin.

(3) Administrative Branch. The Chief of the Administrative Branch, from 31 May 1947 to the end of the current period, was 1st Lt. Glen Baker.

(4) Inspector General. Major Richard F. Cox, IGD, USA, headed an Inspector General's Section, under the Personnel and Adminis-

tration Division, from the date he reported for duty, 15 June 1948, through the end of the year 1948.

(5) Judge Advocate General. Major W. N. J. Nelson, USA, became the first JAG officer of the Project, under the Personnel and Administration Division, on 12 November 1947, and served until he was replaced on 28 ~~December~~ October 1948, by Lt. Col. Edward J. McConnell, USA.

c. Total Personnel.

As of 31 December 1948, the Personnel and Administration Division was composed of ~~eight~~ nine officers (6 USA, 1 USN, 2 USAF), eight enlisted men (7 USA and 1 USAF), and 19 civilians, a total personnel strength of 36.